MITSUBISHI ELECTRIC

Changes for the Better

SPLIT-TYPE AIR CONDITIONERS

Revision H:
• Errors in TROUBLESHOOTING have been corrected.

Please void OB389 REVISED EDITION-G.

OUTDOOR UNIT

SERVICE MANUAL

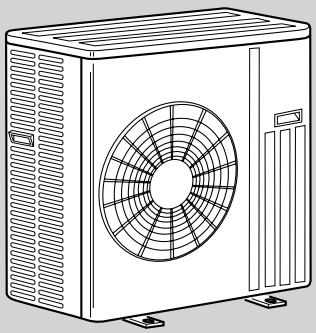
HFC utilized R410A

No. OB389
REVISED EDITION-H

Models

MUZ-GA50VA - E1
MUZ-GA60VA - E1
MUZ-GA60VA - E2
MUZ-GA60VA - E3
MUZ-GA71VA - E1
MUZ-GA71VA - E2

Indoor unit service manual
MSZ-GA•VA Series (OB388)



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NOTE:
• RoHS compliant products have <G> mark on the spec name plate.
For servicing of RoHS compliant products, refer to the RoHS Parts List.
• Contents of SERVICE FUNCTIONS (10) have been removed.

CE

Use the specified refrigerant only

Never use any refrigerant other than that specified.

Doing so may cause a burst, an explosion, or fire when the unit is being used, serviced, or disposed of.
Correct refrigerant is specified in the manuals and on the spec labels provided with our products.
We will not be held responsible for mechanical failure, system malfunction, unit breakdown or accidents caused by failure to follow the instructions.

Revision A :

- RoHS PARTS LIST has been added.
- Failure mode recall function (11-2.) has been changed.
- Check of HPS (11-6.Ⓗ) has been corrected.

Revision B:

- Compressor has been changed. (**MUZ-GA50/60VA**)

	Model	PARTS LIST number	RoHS PARTS LIST number
Previous	SNB130FLDH	E02 851 900	E12 851 900
New	SNB130FLDH1	E02 939 900	E12 939 900

Revision C:

- **MUZ-GA60/71VA-**[E2] have been added.
- Check of outdoor thermistors (11-6.Ⓕ) has been corrected.
- Contents of SERVICE FUNCTIONS (10) have been removed as these models do not have the functions.

Revision D:

- PARTS LIST and RoHS PARTS LIST have been changed.

Revision E:

- REFRIGERANT SYSTEM DIAGRAM has been changed for **MUZ-GA60VA-**[E2].

Revision F:

- **MUZ-GA60VA-**[E3] has been added.

Revision G:

- The fan guard for **MUZ-GA50VA-**[E], **MUZ-GA60VA-**[E] and **MUZ-GA71VA-**[E] has been changed.

Revision H:

- Errors in TROUBLESHOOTING have been corrected.

1 TECHNICAL CHANGES

MUZ-A18YV -E1 ➔ MUZ-GA50VA -E1
MUZ-A24YV -E1 ➔ MUZ-GA60VA -E1
MUZ-A26YV -E1 ➔ MUZ-GA71VA -E1

1. Indication of capacity has been changed. (BTU base ➔ kW base)
2. Outdoor electronic control P.C. board has been changed.
3. Noise filter P.C. board has been changed.
4. Length of fan motor lead wire has been changed.
5. Shape of relay panel has been changed.
6. Signal of terminal block has been changed.

MUZ-GA60VA -E1 ➔ MUZ-GA60VA -E2

1. Compressor has been changed. (SNB130FLDH1 ➔ SNB130FLEH1)
2. Outdoor electronic control P.C. board has been changed.

MUZ-GA60VA -E2 ➔ MUZ-GA60VA -E3

1. Compressor has been changed. (SNB130FLEH1 ➔ SNB130FGBH)
2. Outdoor electronic control P.C. board has been changed.
3. Refrigerant circuit has been changed.

MUZ-GA71VA -E1 ➔ MUZ-GA71VA -E2

1. Outdoor electronic control P.C. board has been changed.

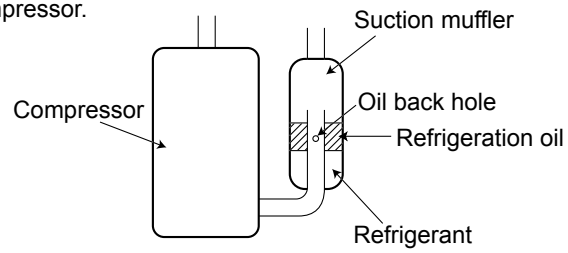
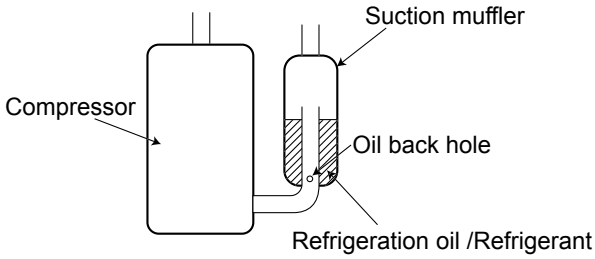
INFORMATION FOR THE AIR CONDITIONER WITH R410A REFRIGERANT

- This room air conditioner adopts HFC refrigerant (R410A) which never destroys the ozone layer.
- Pay particular attention to the following points, though the basic installation procedure is same as that for R22 air conditioners.

① As R410A has working pressure approximate 1.6 times as high as that of R22, some special tools and piping parts/ materials are required. Refer to the table below.
② Take sufficient care not to allow water and other contaminations to enter the R410A refrigerant during storage and installation, since it is more susceptible to contaminations than R22.
③ For refrigerant piping, use clean, pressure-proof parts/materials specifically designed for R410A. (Refer to 2. Refrigerant piping.)
④ Composition change may occur in R410A since it is a mixed refrigerant. When charging, charge liquid refrigerant to prevent composition change.

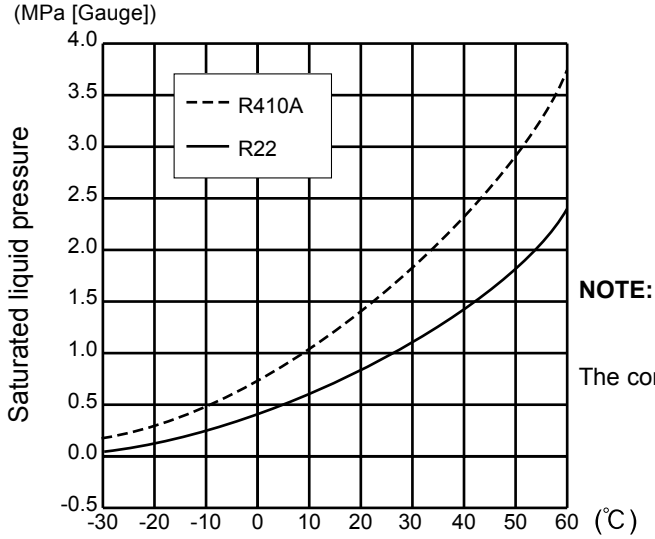
		New refrigerant	Previous refrigerant
Refrigerant	Refrigerant	R410A	R22
	Composition (Ratio)	HFC-32: HFC-125 (50%: 50%)	R22 (100%)
	Refrigerant handling	Pseudo-azeotropic refrigerant	Single refrigerant
	Chlorine	Not included	Included
	Safety group (ASHRAE)	A1/A1	A1
	Molecular weight	72.6	86.5
	Boiling point (°C)	-51.4	-40.8
	Steam pressure [25°C](Mpa)	1.557	0.94
	Saturated steam density [25°C](kg/m^3)	64	44.4
	Combustibility	Non combustible	Non combustible
	ODP ※1	0	0.055
	GWP ※2	1730	1700
	Refrigerant charge method	From liquid phase in cylinder	Gas phase
	Additional charge on leakage	Possible	Possible
Refrigeration oil	Kind	Incompatible oil	Compatible oil
	Color	Non	Light yellow
	Smell	Non	Non

※1: Ozone Depletion Potential : based on CFC-11
※2: Grobal Warming Potential : based on CO_2

	New Specification	Current Specification
Compressor	The incompatible refrigeration oil easily separates from refrigerant and is in the upper layer inside the suction muffler. Raising position of the oil back hole enables to back the refrigeration oil of the upper layer to flow back to the compressor. 	Since refrigerant and refrigeration oil are compatible, refrigeration oil goes back to the compressor through the lower position oil back hole. 

NOTE: The unit of pressure has been changed to MPa on the international system of units (SI unit system).
The conversion factor is: **1(MPa [Gauge]) =10.2(kgf/cm² [Gauge])**

Conversion chart of refrigerant temperature and pressure



NOTE: The unit of pressure has been changed to MPa on the international system of units (SI unit system).

The conversion factor is: **1(MPa [Gauge]) =10.2(kgf/cm² [Gauge])**

1.Tools dedicated for the air conditioner with R410A refrigerant

The following tools are required for R410A refrigerant. Some R22 tools can be substituted for R410A tools.
The diameter of the service port on the stop valve in outdoor unit has been changed to prevent any other refrigerant being charged into the unit. Cap size has been changed from 7/16 UNF with 20 threads to 1/2 UNF with 20 threads.

R410A tools	Can R22 tools be used?	Description
Gauge manifold	No	R410A has high pressures beyond the measurement range of existing gauges. Port diameters have been changed to prevent any other refrigerant from being charged into the unit.
Charge hose	No	Hose material and cap size have been changed to improve the pressure resistance.
Gas leak detector	No	Dedicated for HFC refrigerant.
Torque wrench	Yes	6.35 mm and 9.52 mm
	No	12.7 mm and 15.88mm
Flare tool	Yes	Clamp bar hole has been enlarged to reinforce the spring strength in the tool.
Flare gauge	New	Provided for flaring work (to be used with R22 flare tool).
Vacuum pump adapter	New	Provided to prevent the back flow of oil. This adapter enables you to use vacuum pumps.
Electronic scale for refrigerant charging	New	It is difficult to measure R410A with a charging cylinder because the refrigerant bubbles due to high pressure and high-speed vaporization.

No : Not Substitutable for R410A Yes : Substitutable for R410A

2. Refrigerant piping

① Specifications

Use the refrigerant pipes that meet the following specifications.

Pipe	Outside diameter mm	Wall thickness	Insulation material
For liquid	6.35	0.8 mm	Heat resisting foam plastic Specific gravity 0.045 Thickness 8 mm
	9.52	0.8 mm	
For gas	12.7	0.8 mm	
	15.88	1.0 mm	

- Use a copper pipe or a copper-alloy seamless pipe with a thickness of 0.8 mm (6.35, 9.52, 12.7), 1.0 mm (15.88). Never use any pipe with a thickness less than 0.8 mm (6.35, 9.52, 12.7), 1.0 mm (15.88), as the pressure resistance is insufficient.

② Flaring work and flare nut

Flaring work for R410A pipe differs from that for R22 pipe.

For details of flaring work, refer to installation manual “FLARING WORK”.

Pipe diameter	Dimension of flare nut	
mm	R410A	R22
6.35	17	17
9.52	22	22
12.7	26	24
15.88	29	27

3. Refrigeration oil

Apply the special refrigeration oil (accessories: packed with indoor unit) to the flare and the union seat surfaces.

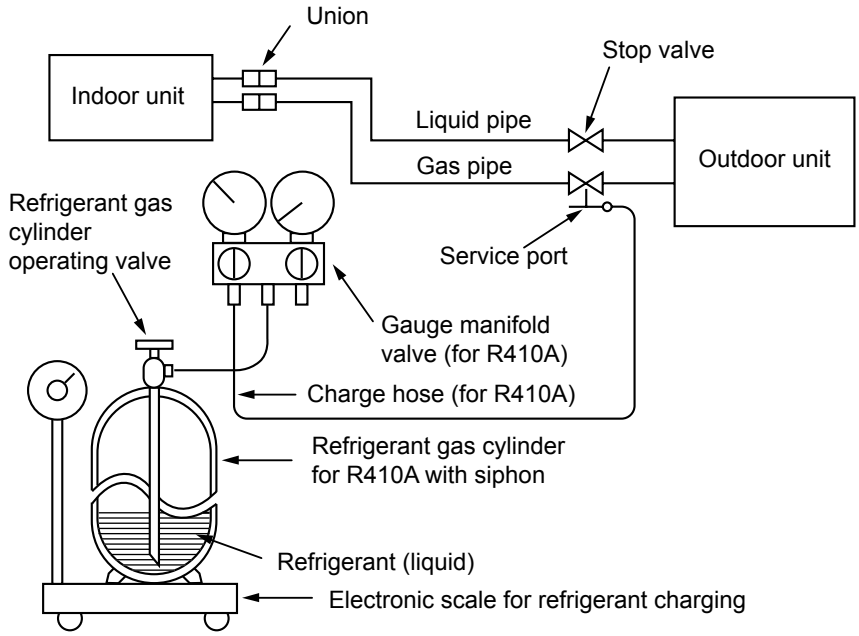
4. Air purge

- Do not discharge the refrigerant into the atmosphere.
  Take care not to discharge refrigerant into the atmosphere during installation, reinstallation, or repairs to the refrigerant circuit.
- Use the vacuum pump for air purging for the purpose of environmental protection.

5. Additional charge

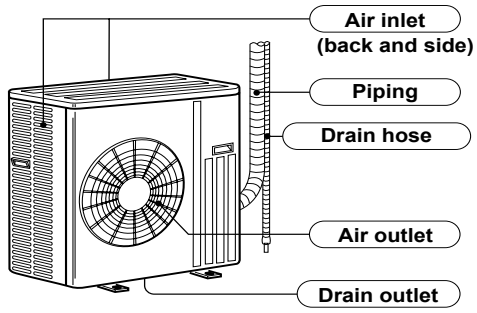
For additional charging, charge the refrigerant from liquid phase of the gas cylinder.

If the refrigerant is charged from the gas phase, composition change may occur in the refrigerant inside the cylinder and the outdoor unit. In this case, capacity of the refrigeration cycle decreases or normal operation can be impossible. However, charging the liquid refrigerant all at once may cause the compressor to be locked. Thus, charge the refrigerant slowly.



2 PART NAMES AND FUNCTIONS

MUZ-GA50VA
MUZ-GA60VA
MUZ-GA71VA



ACCESSORIES

①	Drain socket	1
②	Drain cap Ø33	2

3 SPECIFICATION

Outdoor model			MUZ-GA50VA		MUZ-GA60VA		MUZ-GA71VA	
Function			Cooling	Heating	Cooling	Heating	Cooling	Heating
Power supply			Single phase 230V,50Hz		Single phase 230V,50Hz		Single phase 230V,50Hz	
Capacity	Capacity Rated frequency (Min.-Max.)	kW	5.0(0.9-5.9)	5.9(0.9-7.8)	6.0(0.9-6.7)	6.8(0.9-8.1)	7.1(0.9-8.3)	8.1(0.9-9.6)
	Dehumidification	ℓ/h	2.5	—	3.0	—	3.8	—
	Air flow (High/Low)	m^3/h	2,940/1,650	2,940/2,210	2,940/1,650	2,940/2,210	2,940/1,650	2,940/2,210
Electrical data	Breaker capacity	A	20		20		20	
	Running current	A	6.23	7.01	8.23	8.33	10.4	10.6
	Power input	W	1,410	1,580	1,870	1,880	2,360	2,390
	Power factor	%	98.4	98.0	98.8	98.1	98.7	98.0
	Starting current ✻1	A	7.46		8.93		11.2	
	Compressor motor current ✻1	A	5.93	6.71	7.93	8.03	10.1	10.3
	Fan motor current	A	0.30		0.30		0.30	
Coefficient of performance(C.O.P) ✻1			3.42	3.62	3.11	3.51	2.93	3.31
Compressor	Model		SNB130FLDH or SNB130FLDH1		E1 SNB130FLDH or SNB130FLDH1 E2 SNB130FLEH1 E3 SNB130FGBH		TNB220FMCH	
	Output	W	850		850		1,300	
	Winding resistance(at 20°C)	Ω	U-V 0.45 W-U 0.45 V-W 0.45		U-V 0.45 W-U 0.45 V-W 0.45		U-V 1.41 W-U 1.41 V-W 1.41	
Fan motor	Model		RC0J60-AA		RC0J60-AA		RC0J60-AA	
	Winding resistance (at 20°C)	Ω	BLK-WHT 15.2 WHT-RED 15.2 RED-BLK15.2		BLK-WHT 15.2 WHT-RED 15.2 RED-BLK15.2		BLK-WHT 15.2 WHT-RED 15.2 RED-BLK15.2	
	Dimensions WxHxD	mm	840x850x330		840x850x330		840x850x330	
	Weight	kg	53		53		58	
Special remarks	Sound level (High/Low)	dB	53/51	55/53	53/51	55/53	53/51	55/53
	Fan speed (High/Low)	rpm	800/480	800/620	800/480	800/620	800/480	800/620
	Fan speed regulator		2		2		2	
	Refrigerant filling capacity (R410A)	kg	1.8		1.8		2.0	
	Refrigeration oil (Model)		NEO22		NEO22		NEO22	

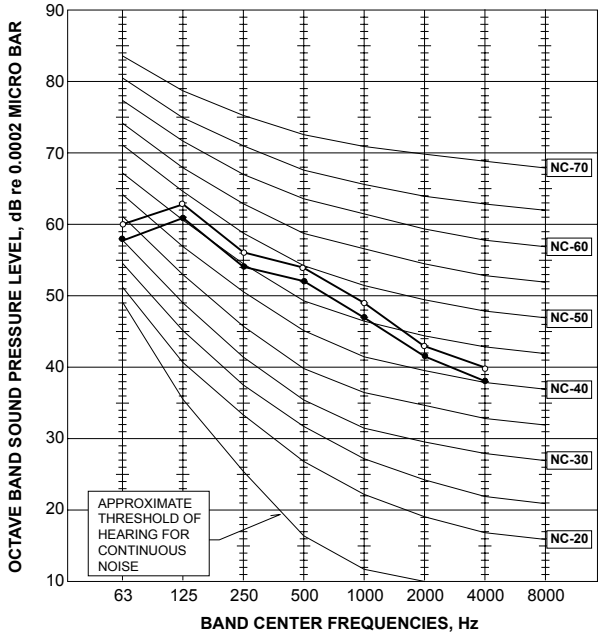
NOTE: Test conditions are based on ISO 5151.
Cooling: Indoor Dry bulb temperature 27℃ Wet bulb temperature 19℃
Outdoor Dry bulb temperature 35℃ Wet bulb temperature (24℃)
Heating: Indoor Dry bulb temperature 20℃ Wet bulb temperature 15℃
Outdoor Dry bulb temperature 7℃ Wet bulb temperature 6℃
Refrigerant piping length (one way): 5m
✻1 Measured under rated operating frequency.

Specifications and rated conditions of main electric parts

Item \ Model		MUZ-GA50VA	MUZ-GA60VA	MUZ-GA71VA
Smoothing capacitor	(CB1,2,3)	560μF 450V		
Current transformer	(CT1,2)	ETQ19Z68AY		
Current transformer	(CT61)	ETQ19Z53AY		
Fuse	(F64)	250V 2A		
Fuse	(F801)	250V 3.15A		
Fuse	(F911)	250V 1A		
Intelligent power module	(HC930)	PS21661-RZ		
High pressure switch	(HPS)	—	ACB-DB156 (for E3)	ACB-DB156
Intelligent power module	(IPM)	PS21244-A		
Reactor	(L)	340μH 20A		
Expansion valve coil	(LEV)	DC 12 V		
Power factor controller	(PFC)	PS51259-A		
Resistor	(R64A,B)	10Ω 10W		
Resistor	(R937A,B)	1.1Ω 2W 2%		
Resistor	(RS1~4)	0.04Ω 7W		
Solenoid coil relay	(SSR61)	TLP3506		
Terminal block	(TB1)	3P		
Terminal block	(TB2)	3P		
Relay	(X64)	G4A		
R.V. coil	(21S4)	AC 220 ~ 240 V		

4 NOISE CRITERIA CURVES

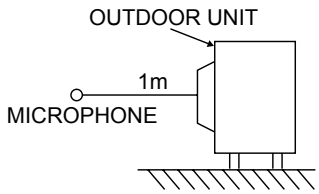
MUZ-GA50VA
MUZ-GA60VA
MUZ-GA71VA



FAN SPEED	FUNCTION	SPL(dB(A))	LINE
High	COOLING	53	●—●
	HEATING	55	○—○

Test conditions

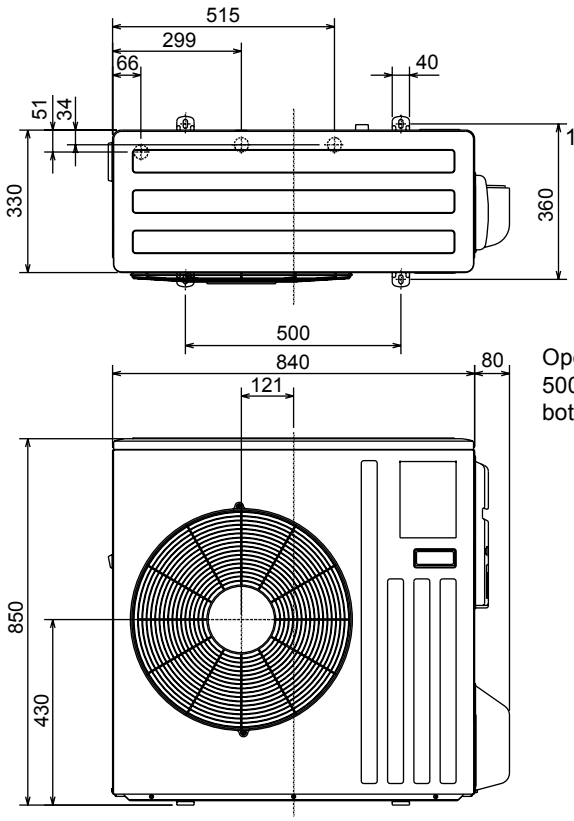
Cooling: Dry-bulb temperature 35°C
Wet-bulb temperature (24°C)
Heating: Dry-bulb temperature 7°C
Wet-bulb temperature 6°C



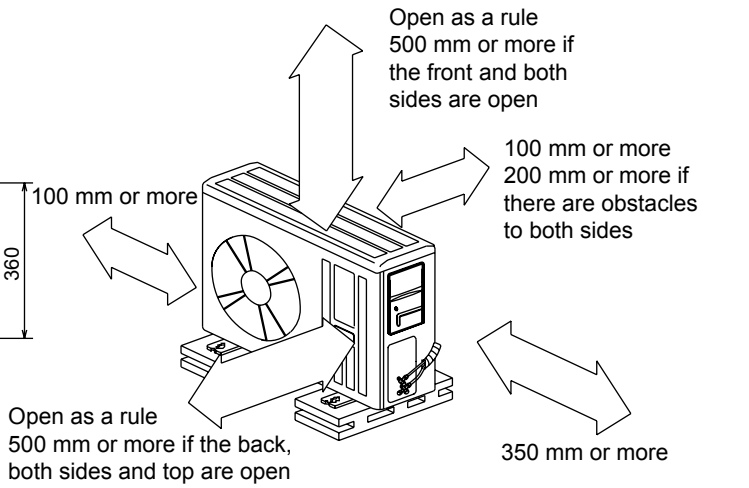
5 OUTLINES AND DIMENSIONS

MUZ-GA50VA
MUZ-GA60VA
MUZ-GA71VA

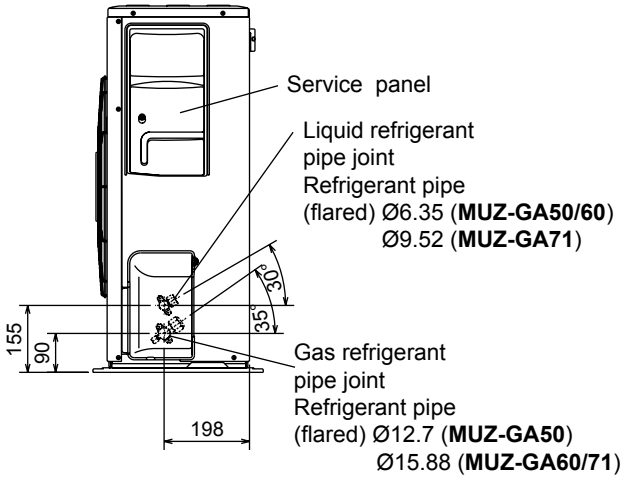
Unit: mm



REQUIRED SPACE

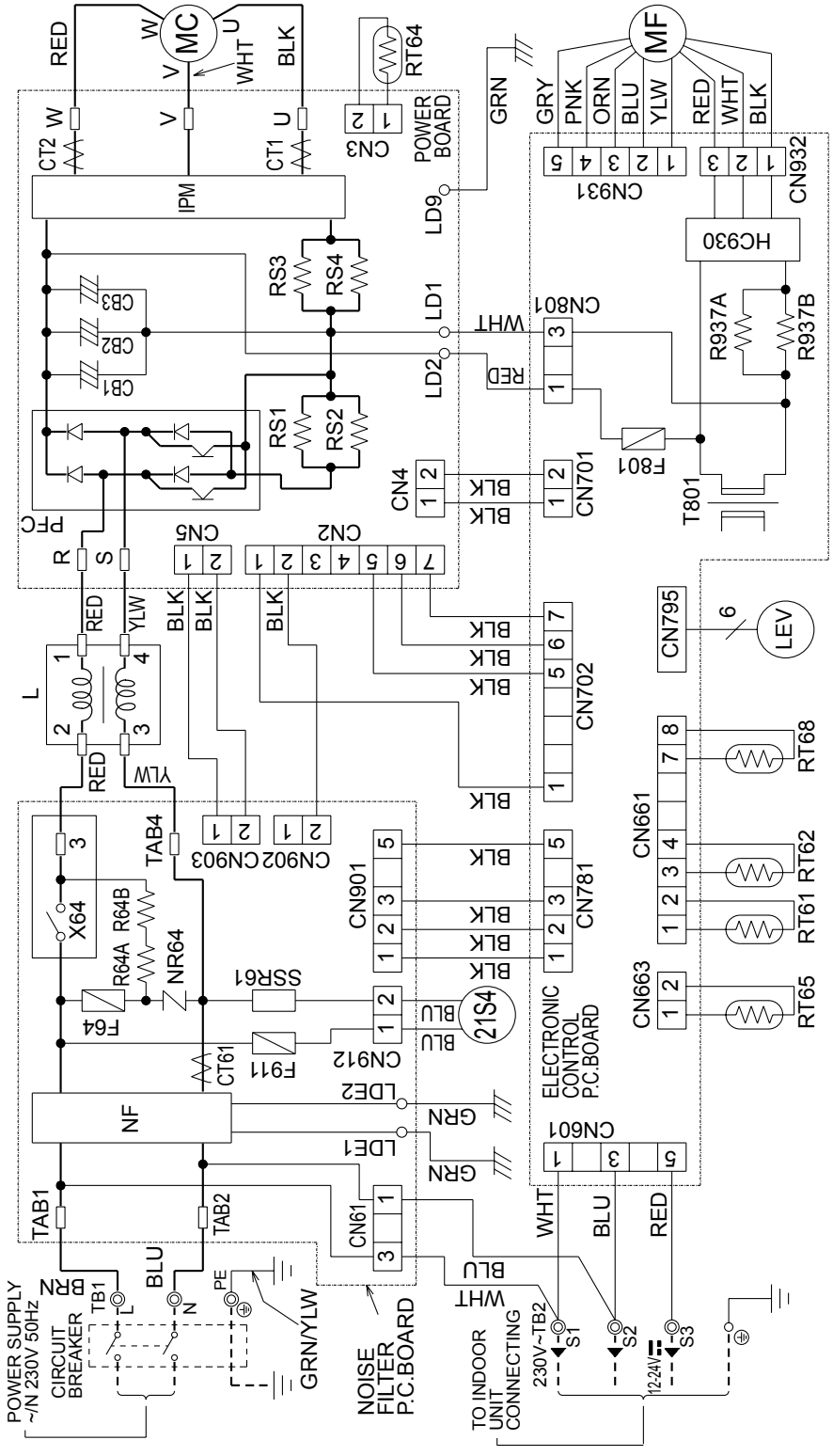


Open as a rule
500 mm or more if the back,
both sides and top are open



6 WIRING DIAGRAM

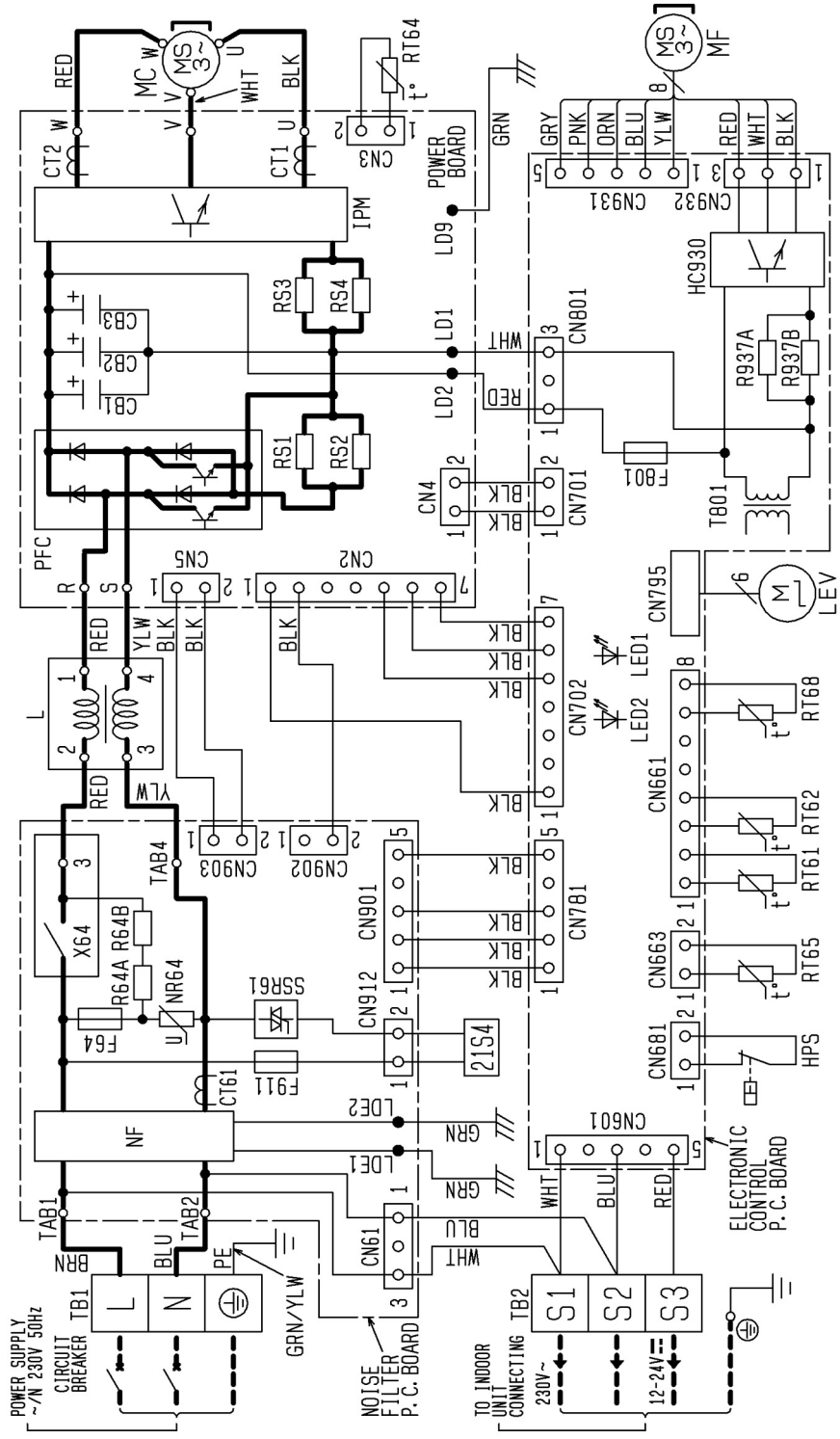
MUZ-GA50VA
MUZ-GA60VA -E1
MUZ-GA60VA -E2



NOTES: 1.About the indoor side electric wiring refer to the indoor unit electric wiring diagram for servicing.
2.Use copper conductors only (for field wiring).
3.Symbols below indicate.
◎:Terminal block □□:Connector

SYMBOL	NAME	SYMBOL	NAME	SYMBOL	NAME
CB1~3	SMOOTHING CAPACITOR	MC	COMPRESSOR	RT64	FIN TEMPERATURE THERMISTOR
CT1, 2	CURRENT TRANSFORMER	MF	OUTDOOR FAN MOTOR	RT65	AMBIENT TEMPERATURE THERMISTOR
CT61	CURRENT TRANSFORMER	NF	NOISE FILTER	RT68	OUTDOOR HEAT EXCHANGER TEMPERATURE THERMISTOR
F64	FUSE (T2AL 250V)	NR64	VARISTOR		
F801	FUSE (T3.15AL 250V)	PFC	POWER FACTOR CONTROLLER	SSR61	SOLENOID COIL RELAY
F911	FUSE (T1AL 250V)	R64A, B	RESISTOR	T801	TRANSFORMER
HC930	INTELLIGENT POWER MODULE	R937A, B	RESISTOR	TB1	TERMINAL BLOCK
IPM	INTELLIGENT POWER MODULE	RS1~4	RESISTOR	TB2	TERMINAL BLOCK
L	REACTOR	RT61	DEFROST THERMISTOR	X64	RELAY
LEV	EXPANSION VALVE COIL	RT62	DISCHARGE TEMPERATURE THERMISTOR	21S4	R.V. COIL

MUZ-GA60VA -E3



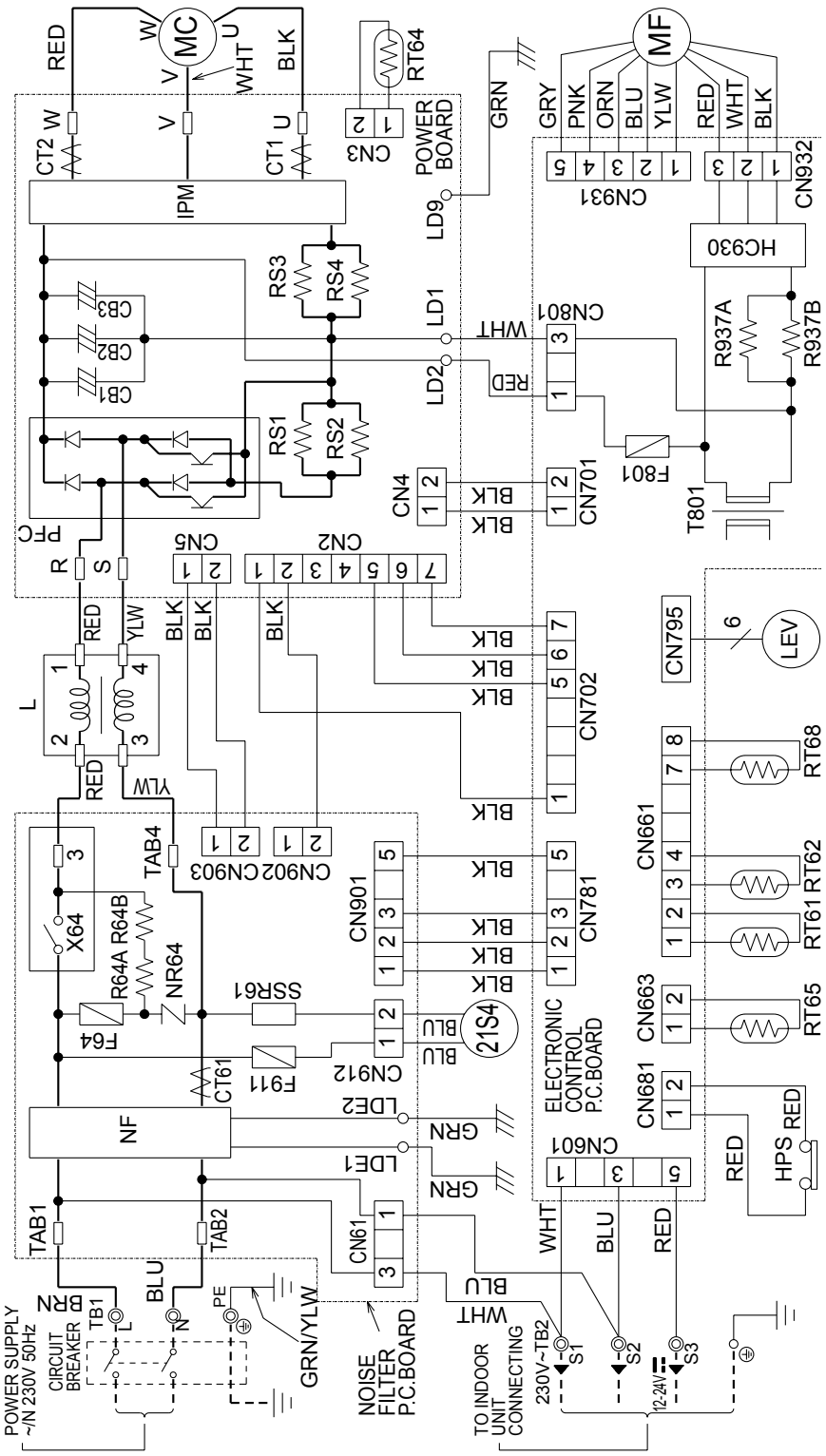
SYMBOL	NAME
CB1~3	SMOOTHING CAPACITOR
CT1, 2	CURRENT TRANSFORMER
CT61	CURRENT TRANSFORMER
F64	FUSE(T2AL250V)
FB01	FUSE(T3.15AL250V)
F911	FUSE(T1AL250V)
HC930	INTELLIGENT POWER MODULE
HPS	HIGH PRESSURE SWITCH
IPM	INTELLIGENT POWER MODULE
L	REACTOR

SYMBOL	NAME
LEV	EXPANSION VALVE
MC	COMPRESSOR
MF	FAN MOTOR
NF	NOISE FILTER
NR64	VARISTOR
PFC	POWER FACTOR CONTROLLER
RS1~4	RESISTOR
RT61	DEFROST THERMISTOR
RT62	DISCHARGE TEMP. THERMISTOR
RT64	FIN TEMP. THERMISTOR

SYMBOL	NAME
RT65	AMBIENT TEMP. THERMISTOR
RT68	OUTDOOR HEAT EXCHANGER TEMP. THERMISTOR
R64A, B	RESISTOR
R937A, B	RESISTOR
SSR61	SOLENOID COIL RELAY
TB1	TERMINAL BLOCK
TB2	TERMINAL BLOCK
TB01	TRANSFORMER
X64	RELAY
21S4	REVERSING VALVE SOLENOID COIL

NOTES 1. About the indoor side electric wiring refer to the indoor unit electric wiring diagram for servicing.
2. Use copper conductors only(for field wiring).
3. Symbols below indicate.
□□□ : Terminal block

MUZ-GA71VA



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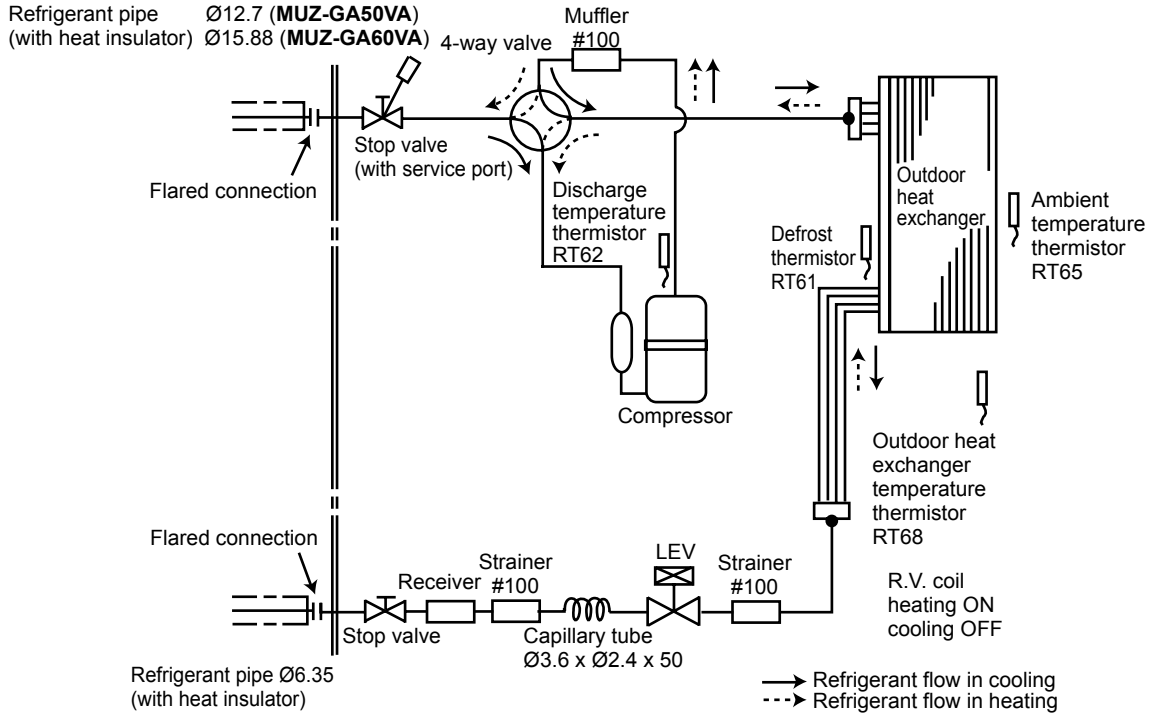
CT1, 2	CURRENT TRANSFORMER	MF	OUTDOOR FAN MOTOR	RT68	OUTDOOR HEAT EXCHANGER TEMPERATURE THERMISTOR
CT61	CURRENT TRANSFORMER	NF	NOISE FILTER		
F64	FUSE (T2AL 250V)	NR64	VARISTOR	SSR61	SOLENOID COIL RELAY
F801	FUSE (T3.15AL 250V)	PFC	POWER FACTOR CONTROLLER	T801	TRANSFORMER
F911	FUSE (T1AL 250V)	R64A,B	RESISTOR	TB1	TERMINAL BLOCK
HC930	INTELLIGENT POWER MODULE	R937A, B	RESISTOR	TB2	TERMINAL BLOCK
HPS	HIGH PRESSURE SWITCH	RS1~4	RESISTOR	X64	RELAY
IPM	INTELLIGENT POWER MODULE	RT61	DEFROST THERMISTOR	21S4	R.V. COIL
L	REACTOR	RT62	DISCHARGE TEMPERATURE THERMISTOR		
LEV	EXPANSION VALVE COIL	RT64	FIN TEMPERATURE THERMISTOR		

7 REFRIGERANT SYSTEM DIAGRAM

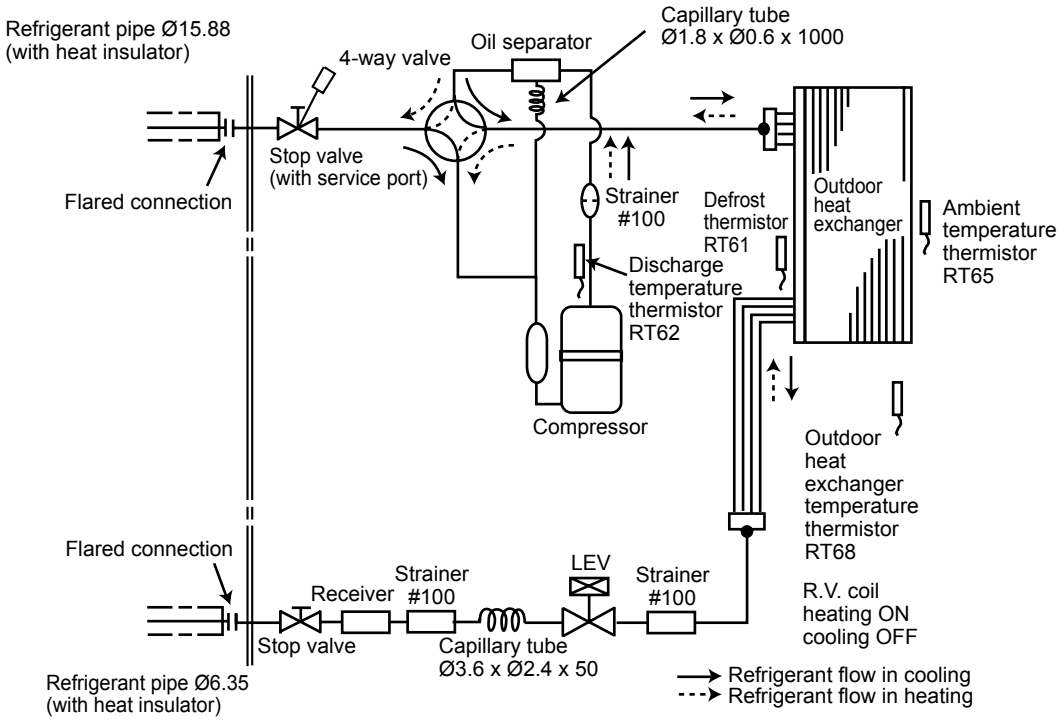
MUZ-GA50VA
MUZ-GA60VA -E1

Unit: mm



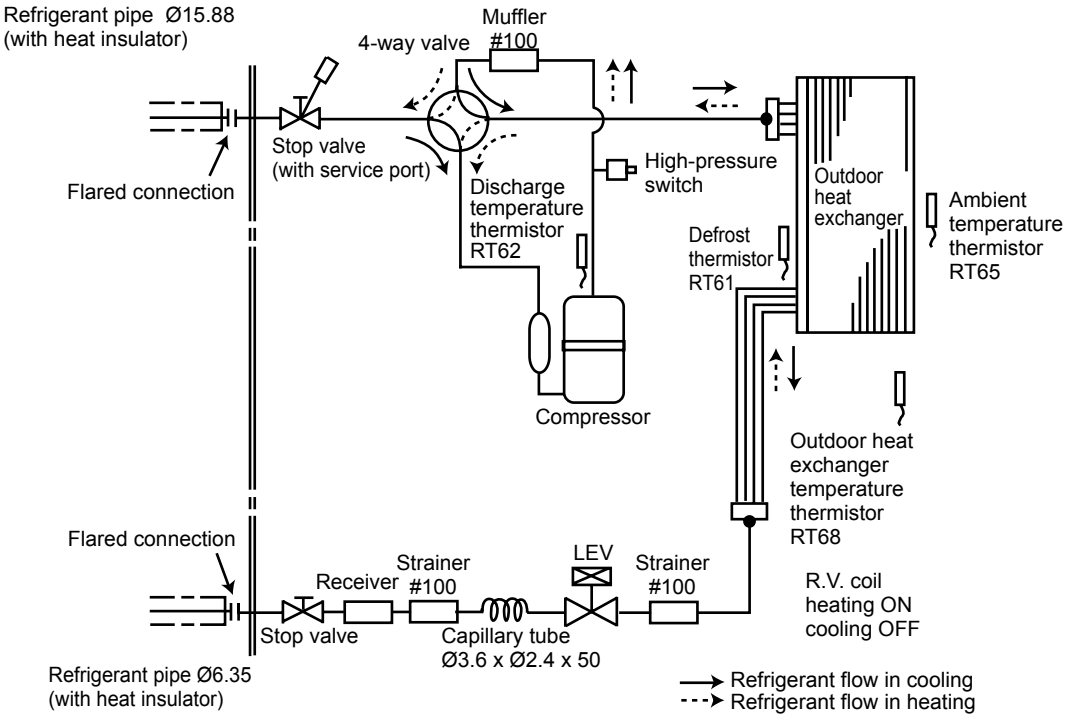
MUZ-GA60VA -E2

Unit: mm



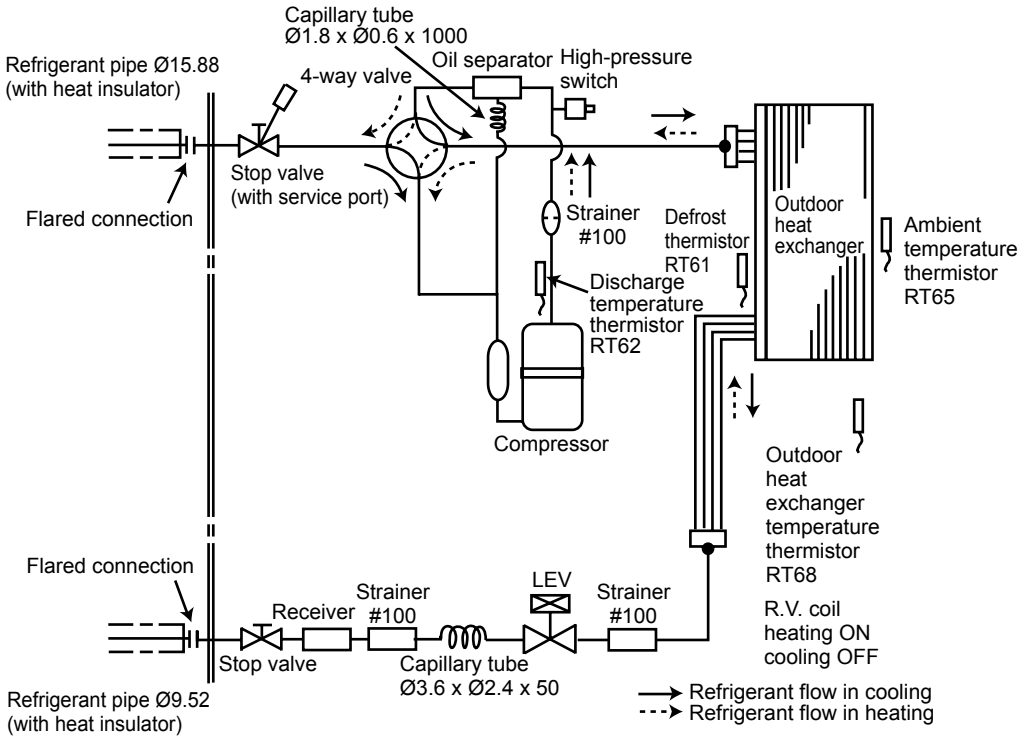
MUZ-GA60VA -E3

Unit: mm



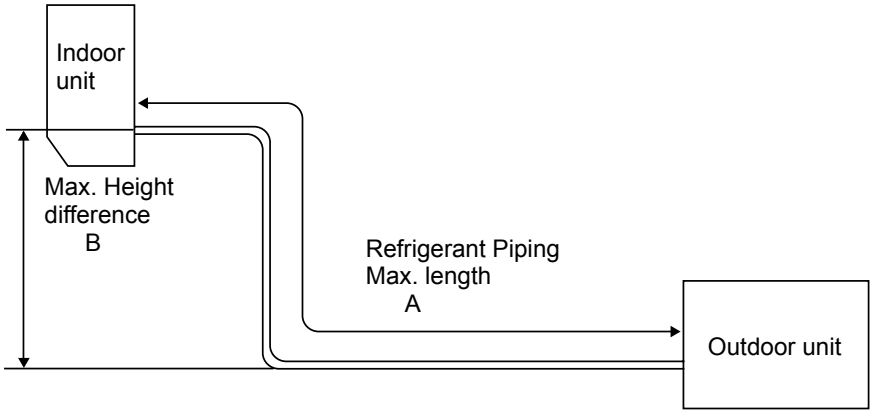
MUZ-GA71VA

Unit: mm



MAX. REFRIGERANT PIPING LENGTH and MAX. HEIGHT DIFFERENCE

Model	Refrigerant piping : m		Piping size O.D : mm	
	Max. length A	Max. Height difference B	Gas	Liquid
MUZ-GA50VA	30	15	12.7	6.35
MUZ-GA60VA			15.88	
MUZ-GA71VA				9.52



ADDITIONAL REFRIGERANT CHARGE (R410A: g)

Model	Outdoor unit precharged	Refrigerant piping length (one way)					
		7m	10m	15m	20m	25m	30m
MUZ-GA50VA MUZ-GA60VA	1,800	0	60	160	260	360	460

Calculation: Xg = 20 g/m x (Refrigerant piping length (m) -7)

Model	Outdoor unit precharged	Refrigerant piping length (one way)					
		7m	10m	15m	20m	25m	30m
MUZ-GA71VA	2,000	0	165	440	715	990	1,265

Calculation: Xg = 55 g/m x (Refrigerant piping length (m) -7)

NOTE: Refrigerant piping exceeding 7m requires additional refrigerant charge according to the calculation.

8 PERFORMANCE CURVES

MUZ-GA50VA
MUZ-GA60VA
MUZ-GA71VA

The standard specifications apply only to the operation of the air conditioner under normal conditions. Since operating conditions vary according to the areas where these units are installed, the following information has been provided to clarify the operating characteristics of the air conditioner under the conditions indicated by the performance curve.

(1) GUARANTEED VOLTAGE

198 ~ 264 V, 50 Hz

(2) AIR FLOW

Air flow should be set at MAX.

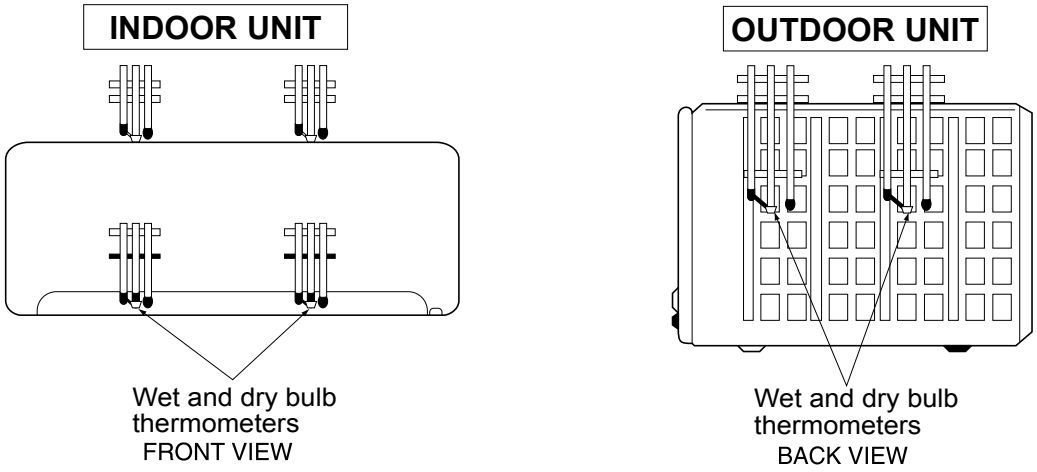
(3) MAIN READINGS

(1) Indoor intake air wet-bulb temperature :	°C WB	Cooling
(2) Indoor outlet air wet-bulb temperature :	°C WB	
(3) Outdoor intake air dry-bulb temperature :	°C DB	
(4) Total input :	W	
(5) Indoor intake air dry-bulb temperature :	°C DB	Heating
(6) Outdoor intake air wet-bulb temperature :	°C WB	
(7) Total input :	W	

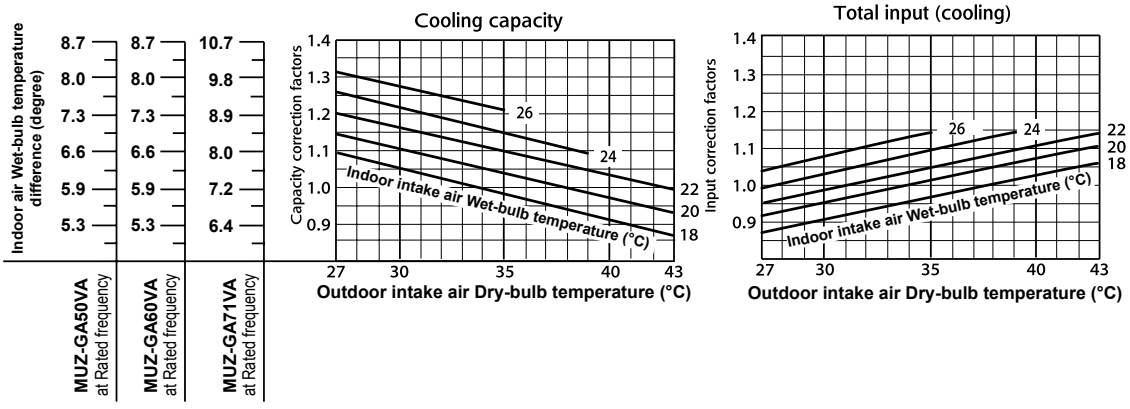
Indoor air wet and dry bulb temperature difference on the left side of the chart on this page and next page shows the difference between the indoor intake air wet and dry bulb temperature and the indoor outlet air wet and dry bulb temperature for your reference at service.

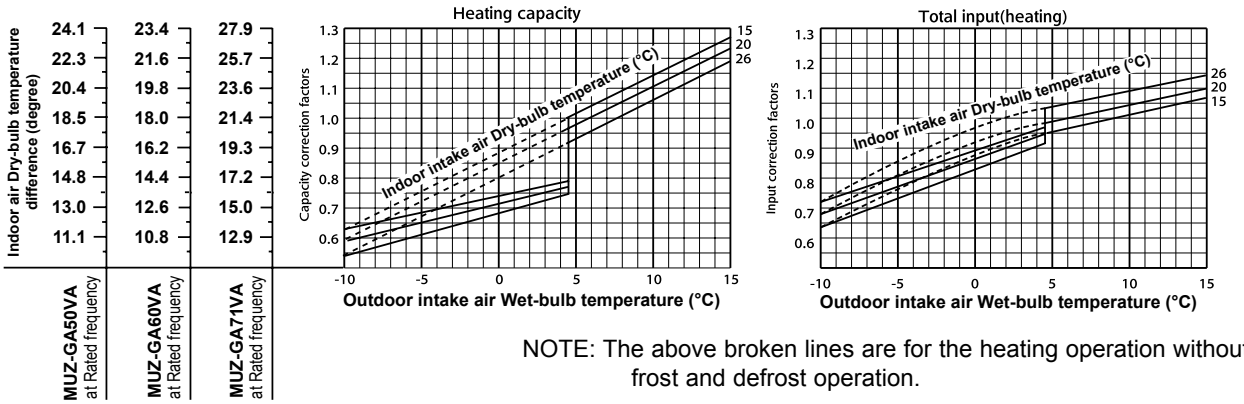
How to measure the indoor air wet and dry bulb temperature difference

1. Attach at least 2 sets of wet and dry bulb thermometers to the indoor air intake as shown in the figure, and at least 2 sets of wet and dry bulb thermometers to the indoor air outlet. The thermometers must be attached to the position where air speed is high.
2. Attach at least 2 sets of wet and dry bulb thermometers to the outdoor air intake.
   Cover the thermometers to prevent direct rays of the sun.
3. Check that the air filter is cleaned.
4. Open windows and doors of room.
5. Press the EMERGENCY OPERATION switch once (twice) to start the EMERGENCY COOL (HEAT) MODE.
6. When system stabilizes after more than 15 minutes, measure temperature and take an average temperature.
7. 10 minutes later, measure temperature again and check that the temperature does not change.



8-1. CAPACITY AND INPUT CURVES

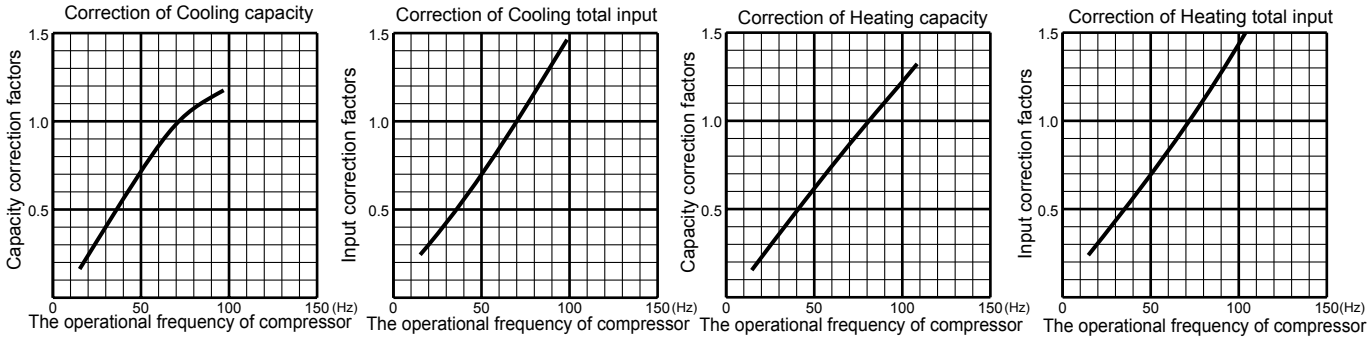




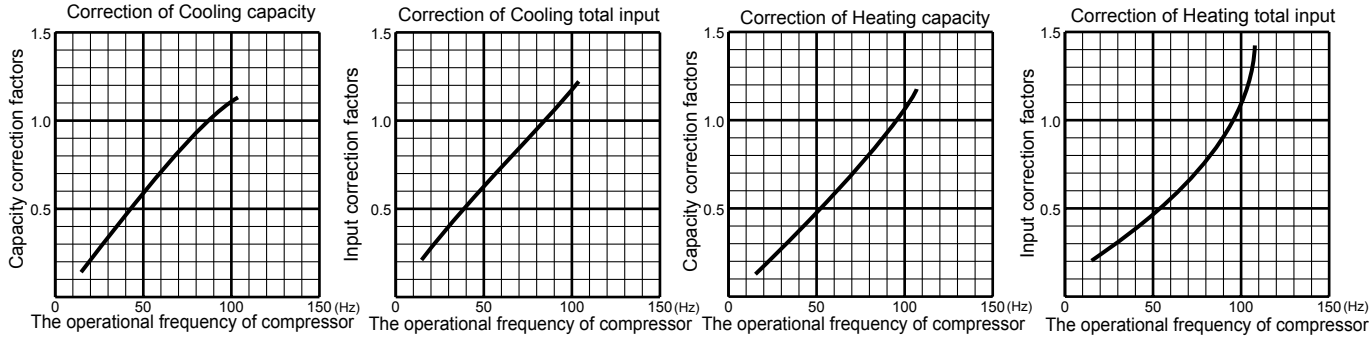
NOTE: The above broken lines are for the heating operation without any frost and defrost operation.

8-2. CAPACITY AND INPUT CORRECTION BY OPERATIONAL FREQUENCY OF COMPRESSOR

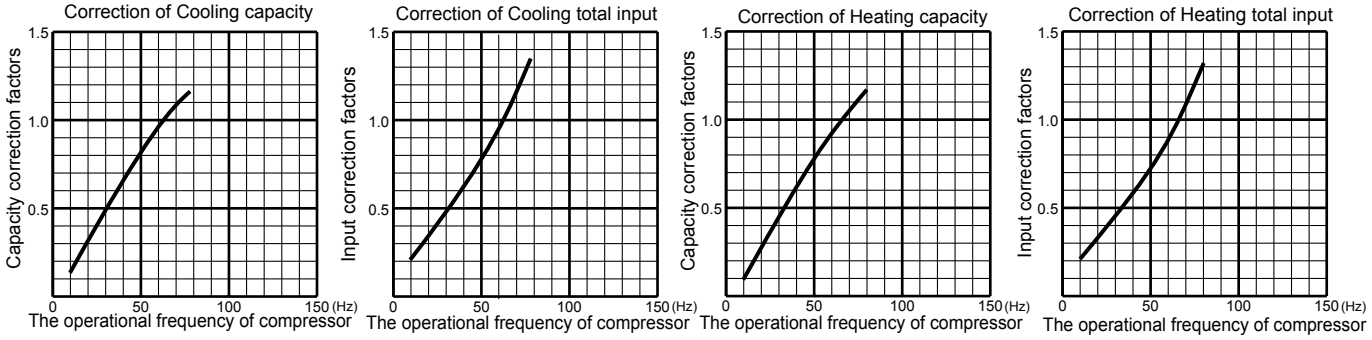
MUZ-GA50VA


Correction of Cooling capacity
Capacity correction factors
The operational frequency of compressor (Hz)
Correction of Cooling total input
Input correction factors
The operational frequency of compressor (Hz)
Correction of Heating capacity
Capacity correction factors
The operational frequency of compressor (Hz)
Correction of Heating total input
Input correction factors
The operational frequency of compressor (Hz)

MUZ-GA60VA


Correction of Cooling capacity
Capacity correction factors
The operational frequency of compressor (Hz)
Correction of Cooling total input
Input correction factors
The operational frequency of compressor (Hz)
Correction of Heating capacity
Capacity correction factors
The operational frequency of compressor (Hz)
Correction of Heating total input
Input correction factors
The operational frequency of compressor (Hz)

MUZ-GA71VA


Correction of Cooling capacity
Capacity correction factors
The operational frequency of compressor (Hz)
Correction of Cooling total input
Input correction factors
The operational frequency of compressor (Hz)
Correction of Heating capacity
Capacity correction factors
The operational frequency of compressor (Hz)
Correction of Heating total input
Input correction factors
The operational frequency of compressor (Hz)

8-3. TEST RUN OPERATION (How to operate fixed-frequency operation)

1. Press EMERGENCY OPERATION switch to COOL or HEAT mode (COOL: Press once, HEAT: Press twice).
2. Test run operation starts and continues to operate for 30 minutes.
3. Compressor operates at rated frequency in COOL mode or 58Hz in HEAT mode.
4. Indoor fan operates at High speed.
5. After 30 minutes, test run operation finishes and EMERGENCY OPERATION starts (Operation frequency of compressor varies).
6. To cancel test run operation (EMERGENCY OPERATION), press EMERGENCY OPERATION switch or any button on remote controller.

8-4. OUTDOOR LOW PRESSURE AND OUTDOOR UNIT CURRENT

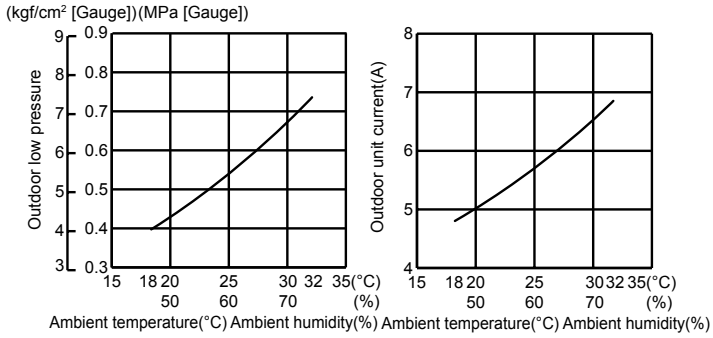
COOL operation

① Both indoor and outdoor unit are under the same temperature/humidity condition.
② Operation: TEST RUN OPERATION (refer to 8-3.)

Dry-bulb temperature(℃)	Relative humidity(%)
20	50
25	60
30	70

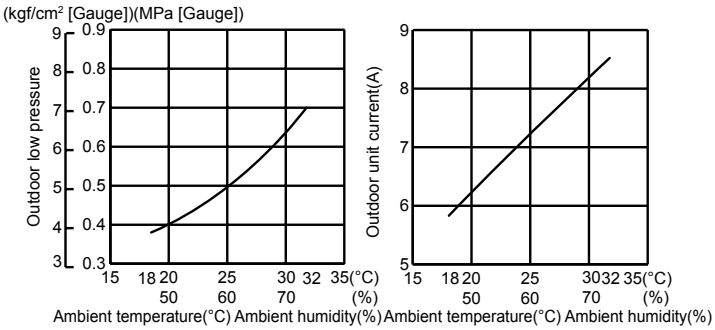
NOTE: The unit of pressure has been changed to MPa on the international system of units (SI unit system).
The conversion factor is: **1 (MPa [Gauge]) =10.2 (kgf/cm² [Gauge])**

MUZ-GA50VA


(kgf/cm² [Gauge])(MPa [Gauge])
Outdoor low pressure
9 8 7 6 5 4 3
0.9 0.8 0.7 0.6 0.5 0.4 0.3
15 18 20 25 30 32 35(°C)
50 60 70 (%)
Ambient temperature(°C) Ambient humidity(%)

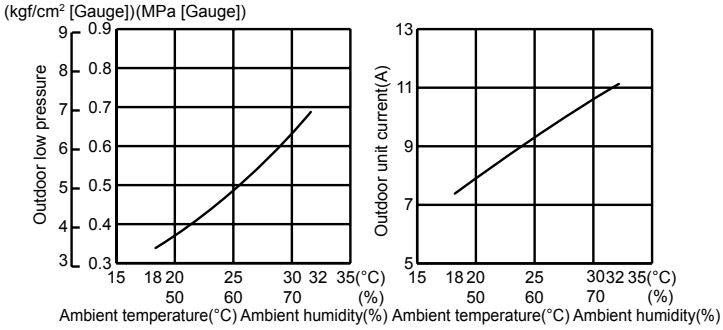
MUZ-GA50VA

MUZ-GA60VA


(kgf/cm² [Gauge])(MPa [Gauge])
Outdoor low pressure
9 8 7 6 5 4 3
0.9 0.8 0.7 0.6 0.5 0.4 0.3
15 18 20 25 30 32 35(°C)
50 60 70 (%)
Ambient temperature(°C) Ambient humidity(%)

MUZ-GA60VA

MUZ-GA71VA


(kgf/cm² [Gauge])(MPa [Gauge])
Outdoor low pressure
9 8 7 6 5 4 3
0.9 0.8 0.7 0.6 0.5 0.4 0.3
15 18 20 25 30 32 35(°C)
50 60 70 (%)
Ambient temperature(°C) Ambient humidity(%)

MUZ-GA71VA

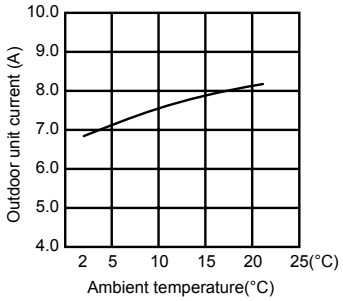
HEAT operation

① Condition:

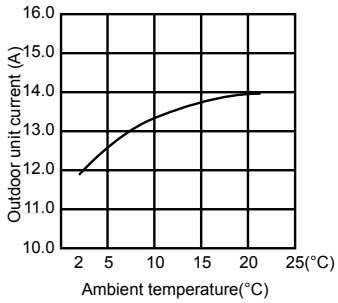
	Indoor	Outdoor			
Dry bulb temperature (ºC)	20.0	2	7	15	20.0
Wet bulb temperature (ºC)	14.5	1	6	12	14.5

② Operation: TEST RUN OPERATION (refer to 8-3.)

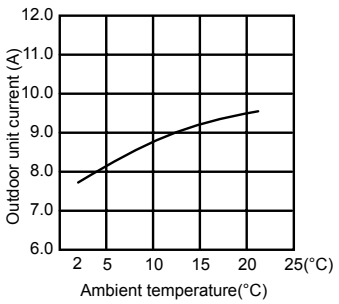
MUZ-GA50VA



MUZ-GA60VA



MUZ-GA71VA



PERFORMANCE DATA COOL operation at Rated frequency

MSZ-GA50VA: MUZ-GA50VA

CAPACITY:5.0(kW) SHF:0.65 INPUT:1460(W)

		OUTDOOR DB(°C)															
INDOOR DB(°C)	INDOOR WB(°C)	21				25				27				30			
		Q	SHC	SHF	INPUT	Q	SHC	SHF	INPUT	Q	SHC	SHF	INPUT	Q	SHC	SHF	INPUT
21	18	5.88	2.76	0.47	1200	5.63	2.64	0.47	1260	5.40	2.54	0.47	1320	5.20	2.44	0.47	1380
21	20	6.13	2.14	0.35	1260	5.88	2.06	0.35	1335	5.70	2.00	0.35	1365	5.50	1.93	0.35	1425
22	18	5.88	3.00	0.51	1200	5.63	2.87	0.51	1260	5.40	2.75	0.51	1320	5.20	2.65	0.51	1380
22	20	6.13	2.39	0.39	1260	5.88	2.29	0.39	1335	5.70	2.22	0.39	1365	5.50	2.15	0.39	1425
22	22	6.38	1.72	0.27	1305	6.15	1.66	0.27	1388	6.00	1.62	0.27	1425	5.75	1.55	0.27	1485
23	18	5.88	3.23	0.55	1200	5.63	3.09	0.55	1260	5.40	2.97	0.55	1320	5.20	2.86	0.55	1380
23	20	6.13	2.63	0.43	1260	5.88	2.53	0.43	1335	5.70	2.45	0.43	1365	5.50	2.37	0.43	1425
23	22	6.38	1.98	0.31	1305	6.15	1.91	0.31	1388	6.00	1.86	0.31	1425	5.75	1.78	0.31	1485
24	18	5.88	3.47	0.59	1200	5.63	3.32	0.59	1260	5.40	3.19	0.59	1320	5.20	3.07	0.59	1380
24	20	6.13	2.88	0.47	1260	5.88	2.76	0.47	1335	5.70	2.68	0.47	1365	5.50	2.59	0.47	1425
24	22	6.38	2.23	0.35	1305	6.15	2.15	0.35	1388	6.00	2.10	0.35	1425	5.75	2.01	0.35	1485
24	24	6.70	1.54	0.23	1365	6.45	1.48	0.23	1440	6.30	1.45	0.23	1485	6.10	1.40	0.23	1560
25	18	5.88	3.70	0.63	1200	5.63	3.54	0.63	1260	5.40	3.40	0.63	1320	5.20	3.28	0.63	1380
25	20	6.13	3.12	0.51	1260	5.88	3.00	0.51	1335	5.70	2.91	0.51	1365	5.50	2.81	0.51	1425
25	22	6.38	2.49	0.39	1305	6.15	2.40	0.39	1388	6.00	2.34	0.39	1425	5.75	2.24	0.39	1485
25	24	6.70	1.81	0.27	1365	6.45	1.74	0.27	1440	6.30	1.70	0.27	1485	6.10	1.65	0.27	1560
26	18	5.88	3.94	0.67	1200	5.63	3.77	0.67	1260	5.40	3.62	0.67	1320	5.20	3.48	0.67	1380
26	20	6.13	3.37	0.55	1260	5.88	3.23	0.55	1335	5.70	3.14	0.55	1365	5.50	3.03	0.55	1425
26	22	6.38	2.74	0.43	1305	6.15	2.64	0.43	1388	6.00	2.58	0.43	1425	5.75	2.47	0.43	1485
26	24	6.70	2.08	0.31	1365	6.45	2.00	0.31	1440	6.30	1.95	0.31	1485	6.10	1.89	0.31	1560
26	26	6.90	1.31	0.19	1440	6.70	1.27	0.19	1515	6.60	1.25	0.19	1560	6.40	1.22	0.19	1605
27	18	5.88	4.17	0.71	1200	5.63	3.99	0.71	1260	5.40	3.83	0.71	1320	5.20	3.69	0.71	1380
27	20	6.13	3.61	0.59	1260	5.88	3.47	0.59	1335	5.70	3.36	0.59	1365	5.50	3.25	0.59	1425
27	22	6.38	3.00	0.47	1305	6.15	2.89	0.47	1388	6.00	2.82	0.47	1425	5.75	2.70	0.47	1485
27	24	6.70	2.35	0.35	1365	6.45	2.26	0.35	1440	6.30	2.21	0.35	1485	6.10	2.14	0.35	1560
27	26	6.90	1.59	0.23	1440	6.70	1.54	0.23	1515	6.60	1.52	0.23	1560	6.40	1.47	0.23	1605
28	18	5.88	4.41	0.75	1200	5.63	4.22	0.75	1260	5.40	4.05	0.75	1320	5.20	3.90	0.75	1380
28	20	6.13	3.86	0.63	1260	5.88	3.70	0.63	1335	5.70	3.59	0.63	1365	5.50	3.47	0.63	1425
28	22	6.38	3.25	0.51	1305	6.15	3.14	0.51	1388	6.00	3.06	0.51	1425	5.75	2.93	0.51	1485
28	24	6.70	2.61	0.39	1365	6.45	2.52	0.39	1440	6.30	2.46	0.39	1485	6.10	2.38	0.39	1560
28	26	6.90	1.86	0.27	1440	6.70	1.81	0.27	1515	6.60	1.78	0.27	1560	6.40	1.73	0.27	1605
29	18	5.88	4.64	0.79	1200	5.63	4.44	0.79	1260	5.40	4.27	0.79	1320	5.20	4.11	0.79	1380
29	20	6.13	4.10	0.67	1260	5.88	3.94	0.67	1335	5.70	3.82	0.67	1365	5.50	3.69	0.67	1425
29	22	6.38	3.51	0.55	1305	6.15	3.38	0.55	1388	6.00	3.30	0.55	1425	5.75	3.16	0.55	1485
29	24	6.70	2.88	0.43	1365	6.45	2.77	0.43	1440	6.30	2.71	0.43	1485	6.10	2.62	0.43	1560
29	26	6.90	2.14	0.31	1440	6.70	2.08	0.31	1515	6.60	2.05	0.31	1560	6.40	1.98	0.31	1605
30	18	5.88	4.88	0.83	1200	5.63	4.67	0.83	1260	5.40	4.48	0.83	1320	5.20	4.32	0.83	1380
30	20	6.13	4.35	0.71	1260	5.88	4.17	0.71	1335	5.70	4.05	0.71	1365	5.50	3.91	0.71	1425
30	22	6.38	3.76	0.59	1305	6.15	3.63	0.59	1388	6.00	3.54	0.59	1425	5.75	3.39	0.59	1485
30	24	6.70	3.15	0.47	1365	6.45	3.03	0.47	1440	6.30	2.96	0.47	1485	6.10	2.87	0.47	1560
30	26	6.90	2.42	0.35	1440	6.70	2.35	0.35	1515	6.60	2.31	0.35	1560	6.40	2.24	0.35	1605
31	18	5.88	5.11	0.87	1200	5.63	4.89	0.87	1260	5.40	4.70	0.87	1320	5.20	4.52	0.87	1380
31	20	6.13	4.59	0.75	1260	5.88	4.41	0.75	1335	5.70	4.28	0.75	1365	5.50	4.13	0.75	1425
31	22	6.38	4.02	0.63	1305	6.15	3.87	0.63	1388	6.00	3.78	0.63	1425	5.75	3.62	0.63	1485
31	24	6.70	3.42	0.51	1365	6.45	3.29	0.51	1440	6.30	3.21	0.51	1485	6.10	3.11	0.51	1560
31	26	6.90	2.69	0.39	1440	6.70	2.61	0.39	1515	6.60	2.57	0.39	1560	6.40	2.50	0.39	1605
32	18	5.88	5.35	0.91	1200	5.63	5.12	0.91	1260	5.40	4.91	0.91	1320	5.20	4.73	0.91	1380
32	20	6.13	4.84	0.79	1260	5.88	4.64	0.79	1335	5.70	4.50	0.79	1365	5.50	4.35	0.79	1425
32	22	6.38	4.27	0.67	1305	6.15	4.12	0.67	1388	6.00	4.02	0.67	1425	5.75	3.85	0.67	1485
32	24	6.70	3.69	0.55	1365	6.45	3.55	0.55	1440	6.30	3.47	0.55	1485	6.10	3.36	0.55	1560
32	26	6.90	2.97	0.43	1440	6.70	2.88	0.43	1515	6.60	2.84	0.43	1560	6.40	2.75	0.43	1605

NOTE Q : Total capacity (kW) SHF : Sensible heat factor DB : Dry-bulb temperature
SHC : Sensible heat capacity (kW) INPUT : Total power input (W) WB : Wet-bulb temperature

PERFORMANCE DATA COOL operation at Rated frequency

MSZ-GA50VA: MUZ-GA50VA

CAPACITY: 5.0(kW) SHF: 0.65 INPUT: 1460(W)

		OUTDOOR DB(°C)															
INDOOR DB(°C)	INDOOR WB(°C)	35				40				43				46			
		Q	SHC	SHF	INPUT	Q	SHC	SHF	INPUT	Q	SHC	SHF	INPUT	Q	SHC	SHF	INPUT
21	18	4.90	2.30	0.47	1470	4.50	2.12	0.47	1560	4.33	2.03	0.47	1590	4.15	1.95	0.47	1620
21	20	5.15	1.80	0.35	1530	4.80	1.68	0.35	1605	4.63	1.62	0.35	1650	4.45	1.56	0.35	1695
22	18	4.90	2.50	0.51	1470	4.50	2.30	0.51	1560	4.33	2.21	0.51	1590	4.15	2.12	0.51	1620
22	20	5.15	2.01	0.39	1530	4.80	1.87	0.39	1605	4.63	1.80	0.39	1650	4.45	1.74	0.39	1695
22	22	5.45	1.47	0.27	1590	5.10	1.38	0.27	1680	4.93	1.33	0.27	1710	4.75	1.28	0.27	1740
23	18	4.90	2.70	0.55	1470	4.50	2.48	0.55	1560	4.33	2.38	0.55	1590	4.15	2.28	0.55	1620
23	20	5.15	2.21	0.43	1530	4.80	2.06	0.43	1605	4.63	1.99	0.43	1650	4.45	1.91	0.43	1695
23	22	5.45	1.69	0.31	1590	5.10	1.58	0.31	1680	4.93	1.53	0.31	1710	4.75	1.47	0.31	1740
24	18	4.90	2.89	0.59	1470	4.50	2.66	0.59	1560	4.33	2.55	0.59	1590	4.15	2.45	0.59	1620
24	20	5.15	2.42	0.47	1530	4.80	2.26	0.47	1605	4.63	2.17	0.47	1650	4.45	2.09	0.47	1695
24	22	5.45	1.91	0.35	1590	5.10	1.79	0.35	1680	4.93	1.72	0.35	1710	4.75	1.66	0.35	1740
24	24	5.75	1.32	0.23	1650	5.40	1.24	0.23	1725	5.25	1.21	0.23	1763	5.10	1.17	0.23	1800
25	18	4.90	3.09	0.63	1470	4.50	2.84	0.63	1560	4.33	2.72	0.63	1590	4.15	2.61	0.63	1620
25	20	5.15	2.63	0.51	1530	4.80	2.45	0.51	1605	4.63	2.36	0.51	1650	4.45	2.27	0.51	1695
25	22	5.45	2.13	0.39	1590	5.10	1.99	0.39	1680	4.93	1.92	0.39	1710	4.75	1.85	0.39	1740
25	24	5.75	1.55	0.27	1650	5.40	1.46	0.27	1725	5.25	1.42	0.27	1763	5.10	1.38	0.27	1800
26	18	4.90	3.28	0.67	1470	4.50	3.02	0.67	1560	4.33	2.90	0.67	1590	4.15	2.78	0.67	1620
26	20	5.15	2.83	0.55	1530	4.80	2.64	0.55	1605	4.63	2.54	0.55	1650	4.45	2.45	0.55	1695
26	22	5.45	2.34	0.43	1590	5.10	2.19	0.43	1680	4.93	2.12	0.43	1710	4.75	2.04	0.43	1740
26	24	5.75	1.78	0.31	1650	5.40	1.67	0.31	1725	5.25	1.63	0.31	1763	5.10	1.58	0.31	1800
26	26	6.05	1.15	0.19	1710	5.70	1.08	0.19	1785	5.53	1.05	0.19	1823	5.35	1.02	0.19	1860
27	18	4.90	3.48	0.71	1470	4.50	3.20	0.71	1560	4.33	3.07	0.71	1590	4.15	2.95	0.71	1620
27	20	5.15	3.04	0.59	1530	4.80	2.83	0.59	1605	4.63	2.73	0.59	1650	4.45	2.63	0.59	1695
27	22	5.45	2.56	0.47	1590	5.10	2.40	0.47	1680	4.93	2.31	0.47	1710	4.75	2.23	0.47	1740
27	24	5.75	2.01	0.35	1650	5.40	1.89	0.35	1725	5.25	1.84	0.35	1763	5.10	1.79	0.35	1800
27	26	6.05	1.39	0.23	1710	5.70	1.31	0.23	1785	5.53	1.27	0.23	1823	5.35	1.23	0.23	1860
28	18	4.90	3.68	0.75	1470	4.50	3.38	0.75	1560	4.33	3.24	0.75	1590	4.15	3.11	0.75	1620
28	20	5.15	3.24	0.63	1530	4.80	3.02	0.63	1605	4.63	2.91	0.63	1650	4.45	2.80	0.63	1695
28	22	5.45	2.78	0.51	1590	5.10	2.60	0.51	1680	4.93	2.51	0.51	1710	4.75	2.42	0.51	1740
28	24	5.75	2.24	0.39	1650	5.40	2.11	0.39	1725	5.25	2.05	0.39	1763	5.10	1.99	0.39	1800
28	26	6.05	1.63	0.27	1710	5.70	1.54	0.27	1785	5.53	1.49	0.27	1823	5.35	1.44	0.27	1860
29	18	4.90	3.87	0.79	1470	4.50	3.56	0.79	1560	4.33	3.42	0.79	1590	4.15	3.28	0.79	1620
29	20	5.15	3.45	0.67	1530	4.80	3.22	0.67	1605	4.63	3.10	0.67	1650	4.45	2.98	0.67	1695
29	22	5.45	3.00	0.55	1590	5.10	2.81	0.55	1680	4.93	2.71	0.55	1710	4.75	2.61	0.55	1740
29	24	5.75	2.47	0.43	1650	5.40	2.32	0.43	1725	5.25	2.26	0.43	1763	5.10	2.19	0.43	1800
29	26	6.05	1.88	0.31	1710	5.70	1.77	0.31	1785	5.53	1.71	0.31	1823	5.35	1.66	0.31	1860
30	18	4.90	4.07	0.83	1470	4.50	3.74	0.83	1560	4.33	3.59	0.83	1590	4.15	3.44	0.83	1620
30	20	5.15	3.66	0.71	1530	4.80	3.41	0.71	1605	4.63	3.28	0.71	1650	4.45	3.16	0.71	1695
30	22	5.45	3.22	0.59	1590	5.10	3.01	0.59	1680	4.93	2.91	0.59	1710	4.75	2.80	0.59	1740
30	24	5.75	2.70	0.47	1650	5.40	2.54	0.47	1725	5.25	2.47	0.47	1763	5.10	2.40	0.47	1800
30	26	6.05	2.12	0.35	1710	5.70	2.00	0.35	1785	5.53	1.93	0.35	1823	5.35	1.87	0.35	1860
31	18	4.90	4.26	0.87	1470	4.50	3.92	0.87	1560	4.33	3.76	0.87	1590	4.15	3.61	0.87	1620
31	20	5.15	3.86	0.75	1530	4.80	3.60	0.75	1605	4.63	3.47	0.75	1650	4.45	3.34	0.75	1695
31	22	5.45	3.43	0.63	1590	5.10	3.21	0.63	1680	4.93	3.10	0.63	1710	4.75	2.99	0.63	1740
31	24	5.75	2.93	0.51	1650	5.40	2.75	0.51	1725	5.25	2.68	0.51	1763	5.10	2.60	0.51	1800
31	26	6.05	2.36	0.39	1710	5.70	2.22	0.39	1785	5.53	2.15	0.39	1823	5.35	2.09	0.39	1860
32	18	4.90	4.46	0.91	1470	4.50	4.10	0.91	1560	4.33	3.94	0.91	1590	4.15	3.78	0.91	1620
32	20	5.15	4.07	0.79	1530	4.80	3.79	0.79	1605	4.63	3.65	0.79	1650	4.45	3.52	0.79	1695
32	22	5.45	3.65	0.67	1590	5.10	3.42	0.67	1680	4.93	3.30	0.67	1710	4.75	3.18	0.67	1740
32	24	5.75	3.16	0.55	1650	5.40	2.97	0.55	1725	5.25	2.89	0.55	1763	5.10	2.81	0.55	1800
32	26	6.05	2.60	0.43	1710	5.70	2.45	0.43	1785	5.53	2.38	0.43	1823	5.35	2.30	0.43	1860

NOTE Q : Total capacity (kW) SHF : Sensible heat factor DB : Dry-bulb temperature
SHC : Sensible heat capacity (kW) INPUT : Total power input (W) WB : Wet-bulb temperature

PERFORMANCE DATA COOL operation at Rated frequency

MSZ-GA60VA: MUZ-GA60VA

CAPACITY: 6.0(kW) SHF: 0.64 INPUT: 1930(W)

INDOOR DB(°C)	INDOOR WB(°C)	OUTDOOR DB(°C) 21 Q	SHC	SHF	INPUT	25 Q	SHC	SHF	INPUT	27 Q	SHC	SHF	INPUT	30 Q	SHC	SHF	INPUT
21	18	7.05	3.24	0.46	1560	6.75	3.11	0.46	1638	6.48	2.98	0.46	1716	6.24	2.87	0.46	1794
21	20	7.35	2.50	0.34	1638	7.05	2.40	0.34	1736	6.84	2.33	0.34	1775	6.60	2.24	0.34	1853
22	18	7.05	3.53	0.50	1560	6.75	3.38	0.50	1638	6.48	3.24	0.50	1716	6.24	3.12	0.50	1794
22	20	7.35	2.79	0.38	1638	7.05	2.68	0.38	1736	6.84	2.60	0.38	1775	6.60	2.51	0.38	1853
22	22	7.65	1.99	0.26	1697	7.38	1.92	0.26	1804	7.20	1.87	0.26	1853	6.90	1.79	0.26	1931
23	18	7.05	3.81	0.54	1560	6.75	3.65	0.54	1638	6.48	3.50	0.54	1716	6.24	3.37	0.54	1794
23	20	7.35	3.09	0.42	1638	7.05	2.96	0.42	1736	6.84	2.87	0.42	1775	6.60	2.77	0.42	1853
23	22	7.65	2.30	0.30	1697	7.38	2.21	0.30	1804	7.20	2.16	0.30	1853	6.90	2.07	0.30	1931
24	18	7.05	4.09	0.58	1560	6.75	3.92	0.58	1638	6.48	3.76	0.58	1716	6.24	3.62	0.58	1794
24	20	7.35	3.38	0.46	1638	7.05	3.24	0.46	1736	6.84	3.15	0.46	1775	6.60	3.04	0.46	1853
24	22	7.65	2.60	0.34	1697	7.38	2.51	0.34	1804	7.20	2.45	0.34	1853	6.90	2.35	0.34	1931
24	24	8.04	1.77	0.22	1775	7.74	1.70	0.22	1872	7.56	1.66	0.22	1931	7.32	1.61	0.22	2028
25	18	7.05	4.37	0.62	1560	6.75	4.19	0.62	1638	6.48	4.02	0.62	1716	6.24	3.87	0.62	1794
25	20	7.35	3.68	0.50	1638	7.05	3.53	0.50	1736	6.84	3.42	0.50	1775	6.60	3.30	0.50	1853
25	22	7.65	2.91	0.38	1697	7.38	2.80	0.38	1804	7.20	2.74	0.38	1853	6.90	2.62	0.38	1931
25	24	8.04	2.09	0.26	1775	7.74	2.01	0.26	1872	7.56	1.97	0.26	1931	7.32	1.90	0.26	2028
26	18	7.05	4.65	0.66	1560	6.75	4.46	0.66	1638	6.48	4.28	0.66	1716	6.24	4.12	0.66	1794
26	20	7.35	3.97	0.54	1638	7.05	3.81	0.54	1736	6.84	3.69	0.54	1775	6.60	3.56	0.54	1853
26	22	7.65	3.21	0.42	1697	7.38	3.10	0.42	1804	7.20	3.02	0.42	1853	6.90	2.90	0.42	1931
26	24	8.04	2.41	0.30	1775	7.74	2.32	0.30	1872	7.56	2.27	0.30	1931	7.32	2.20	0.30	2028
26	26	8.28	1.49	0.18	1872	8.04	1.45	0.18	1970	7.92	1.43	0.18	2028	7.68	1.38	0.18	2087
27	18	7.05	4.94	0.70	1560	6.75	4.73	0.70	1638	6.48	4.54	0.70	1716	6.24	4.37	0.70	1794
27	20	7.35	4.26	0.58	1638	7.05	4.09	0.58	1736	6.84	3.97	0.58	1775	6.60	3.83	0.58	1853
27	22	7.65	3.52	0.46	1697	7.38	3.39	0.46	1804	7.20	3.31	0.46	1853	6.90	3.17	0.46	1931
27	24	8.04	2.73	0.34	1775	7.74	2.63	0.34	1872	7.56	2.57	0.34	1931	7.32	2.49	0.34	2028
27	26	8.28	1.82	0.22	1872	8.04	1.77	0.22	1970	7.92	1.74	0.22	2028	7.68	1.69	0.22	2087
28	18	7.05	5.22	0.74	1560	6.75	5.00	0.74	1638	6.48	4.80	0.74	1716	6.24	4.62	0.74	1794
28	20	7.35	4.56	0.62	1638	7.05	4.37	0.62	1736	6.84	4.24	0.62	1775	6.60	4.09	0.62	1853
28	22	7.65	3.83	0.50	1697	7.38	3.69	0.50	1804	7.20	3.60	0.50	1853	6.90	3.45	0.50	1931
28	24	8.04	3.06	0.38	1775	7.74	2.94	0.38	1872	7.56	2.87	0.38	1931	7.32	2.78	0.38	2028
28	26	8.28	2.15	0.26	1872	8.04	2.09	0.26	1970	7.92	2.06	0.26	2028	7.68	2.00	0.26	2087
29	18	7.05	5.50	0.78	1560	6.75	5.27	0.78	1638	6.48	5.05	0.78	1716	6.24	4.87	0.78	1794
29	20	7.35	4.85	0.66	1638	7.05	4.65	0.66	1736	6.84	4.51	0.66	1775	6.60	4.36	0.66	1853
29	22	7.65	4.13	0.54	1697	7.38	3.99	0.54	1804	7.20	3.89	0.54	1853	6.90	3.73	0.54	1931
29	24	8.04	3.38	0.42	1775	7.74	3.25	0.42	1872	7.56	3.18	0.42	1931	7.32	3.07	0.42	2028
29	26	8.28	2.48	0.30	1872	8.04	2.41	0.30	1970	7.92	2.38	0.30	2028	7.68	2.30	0.30	2087
30	18	7.05	5.78	0.82	1560	6.75	5.54	0.82	1638	6.48	5.31	0.82	1716	6.24	5.12	0.82	1794
30	20	7.35	5.15	0.70	1638	7.05	4.94	0.70	1736	6.84	4.79	0.70	1775	6.60	4.62	0.70	1853
30	22	7.65	4.44	0.58	1697	7.38	4.28	0.58	1804	7.20	4.18	0.58	1853	6.90	4.00	0.58	1931
30	24	8.04	3.70	0.46	1775	7.74	3.56	0.46	1872	7.56	3.48	0.46	1931	7.32	3.37	0.46	2028
30	26	8.28	2.82	0.34	1872	8.04	2.73	0.34	1970	7.92	2.69	0.34	2028	7.68	2.61	0.34	2087
31	18	7.05	6.06	0.86	1560	6.75	5.81	0.86	1638	6.48	5.57	0.86	1716	6.24	5.37	0.86	1794
31	20	7.35	5.44	0.74	1638	7.05	5.22	0.74	1736	6.84	5.06	0.74	1775	6.60	4.88	0.74	1853
31	22	7.65	4.74	0.62	1697	7.38	4.58	0.62	1804	7.20	4.46	0.62	1853	6.90	4.28	0.62	1931
31	24	8.04	4.02	0.50	1775	7.74	3.87	0.50	1872	7.56	3.78	0.50	1931	7.32	3.66	0.50	2028
31	26	8.28	3.15	0.38	1872	8.04	3.06	0.38	1970	7.92	3.01	0.38	2028	7.68	2.92	0.38	2087
32	18	7.05	6.35	0.90	1560	6.75	6.08	0.90	1638	6.48	5.83	0.90	1716	6.24	5.62	0.90	1794
32	20	7.35	5.73	0.78	1638	7.05	5.50	0.78	1736	6.84	5.34	0.78	1775	6.60	5.15	0.78	1853
32	22	7.65	5.05	0.66	1697	7.38	4.87	0.66	1804	7.20	4.75	0.66	1853	6.90	4.55	0.66	1931
32	24	8.04	4.34	0.54	1775	7.74	4.18	0.54	1872	7.56	4.08	0.54	1931	7.32	3.95	0.54	2028
32	26	8.28	3.48	0.42	1872	8.04	3.38	0.42	1970	7.92	3.33	0.42	2028	7.68	3.23	0.42	2087

NOTE Q : Total capacity (kW) SHF : Sensible heat factor DB : Dry-bulb temperature
SHC : Sensible heat capacity (kW) INPUT : Total power input (W) WB : Wet-bulb temperature

PERFORMANCE DATA COOL operation at Rated frequency

MSZ-GA60VA: MUZ-GA60VA

CAPACITY:6.0(kW) SHF:0.64 INPUT:1930(W)

		OUTDOOR DB(°C)															
INDOOR DB(°C)	INDOOR WB(°C)	35				40				43				46			
		Q	SHC	SHF	INPUT	Q	SHC	SHF	INPUT	Q	SHC	SHF	INPUT	Q	SHC	SHF	INPUT
21	18	5.88	2.70	0.46	1911	5.40	2.48	0.46	2028	5.19	2.39	0.46	2067	4.98	2.29	0.46	2106
21	20	6.18	2.10	0.34	1989	5.76	1.96	0.34	2087	5.55	1.89	0.34	2145	5.34	1.82	0.34	2204
22	18	5.88	2.94	0.50	1911	5.40	2.70	0.50	2028	5.19	2.60	0.50	2067	4.98	2.49	0.50	2106
22	20	6.18	2.35	0.38	1989	5.76	2.19	0.38	2087	5.55	2.11	0.38	2145	5.34	2.03	0.38	2204
22	22	6.54	1.70	0.26	2067	6.12	1.59	0.26	2184	5.91	1.54	0.26	2223	5.70	1.48	0.26	2262
23	18	5.88	3.18	0.54	1911	5.40	2.92	0.54	2028	5.19	2.80	0.54	2067	4.98	2.69	0.54	2106
23	20	6.18	2.60	0.42	1989	5.76	2.42	0.42	2087	5.55	2.33	0.42	2145	5.34	2.24	0.42	2204
23	22	6.54	1.96	0.30	2067	6.12	1.84	0.30	2184	5.91	1.77	0.30	2223	5.70	1.71	0.30	2262
24	18	5.88	3.41	0.58	1911	5.40	3.13	0.58	2028	5.19	3.01	0.58	2067	4.98	2.89	0.58	2106
24	20	6.18	2.84	0.46	1989	5.76	2.65	0.46	2087	5.55	2.55	0.46	2145	5.34	2.46	0.46	2204
24	22	6.54	2.22	0.34	2067	6.12	2.08	0.34	2184	5.91	2.01	0.34	2223	5.70	1.94	0.34	2262
24	24	6.90	1.52	0.22	2145	6.48	1.43	0.22	2243	6.30	1.39	0.22	2291	6.12	1.35	0.22	2340
25	18	5.88	3.65	0.62	1911	5.40	3.35	0.62	2028	5.19	3.22	0.62	2067	4.98	3.09	0.62	2106
25	20	6.18	3.09	0.50	1989	5.76	2.88	0.50	2087	5.55	2.78	0.50	2145	5.34	2.67	0.50	2204
25	22	6.54	2.49	0.38	2067	6.12	2.33	0.38	2184	5.91	2.25	0.38	2223	5.70	2.17	0.38	2262
25	24	6.90	1.79	0.26	2145	6.48	1.68	0.26	2243	6.30	1.64	0.26	2291	6.12	1.59	0.26	2340
26	18	5.88	3.88	0.66	1911	5.40	3.56	0.66	2028	5.19	3.43	0.66	2067	4.98	3.29	0.66	2106
26	20	6.18	3.34	0.54	1989	5.76	3.11	0.54	2087	5.55	3.00	0.54	2145	5.34	2.88	0.54	2204
26	22	6.54	2.75	0.42	2067	6.12	2.57	0.42	2184	5.91	2.48	0.42	2223	5.70	2.39	0.42	2262
26	24	6.90	2.07	0.30	2145	6.48	1.94	0.30	2243	6.30	1.89	0.30	2291	6.12	1.84	0.30	2340
26	26	7.26	1.31	0.18	2223	6.84	1.23	0.18	2321	6.63	1.19	0.18	2369	6.42	1.16	0.18	2418
27	18	5.88	4.12	0.70	1911	5.40	3.78	0.70	2028	5.19	3.63	0.70	2067	4.98	3.49	0.70	2106
27	20	6.18	3.58	0.58	1989	5.76	3.34	0.58	2087	5.55	3.22	0.58	2145	5.34	3.10	0.58	2204
27	22	6.54	3.01	0.46	2067	6.12	2.82	0.46	2184	5.91	2.72	0.46	2223	5.70	2.62	0.46	2262
27	24	6.90	2.35	0.34	2145	6.48	2.20	0.34	2243	6.30	2.14	0.34	2291	6.12	2.08	0.34	2340
27	26	7.26	1.60	0.22	2223	6.84	1.50	0.22	2321	6.63	1.46	0.22	2369	6.42	1.41	0.22	2418
28	18	5.88	4.35	0.74	1911	5.40	4.00	0.74	2028	5.19	3.84	0.74	2067	4.98	3.69	0.74	2106
28	20	6.18	3.83	0.62	1989	5.76	3.57	0.62	2087	5.55	3.44	0.62	2145	5.34	3.31	0.62	2204
28	22	6.54	3.27	0.50	2067	6.12	3.06	0.50	2184	5.91	2.96	0.50	2223	5.70	2.85	0.50	2262
28	24	6.90	2.62	0.38	2145	6.48	2.46	0.38	2243	6.30	2.39	0.38	2291	6.12	2.33	0.38	2340
28	26	7.26	1.89	0.26	2223	6.84	1.78	0.26	2321	6.63	1.72	0.26	2369	6.42	1.67	0.26	2418
29	18	5.88	4.59	0.78	1911	5.40	4.21	0.78	2028	5.19	4.05	0.78	2067	4.98	3.88	0.78	2106
29	20	6.18	4.08	0.66	1989	5.76	3.80	0.66	2087	5.55	3.66	0.66	2145	5.34	3.52	0.66	2204
29	22	6.54	3.53	0.54	2067	6.12	3.30	0.54	2184	5.91	3.19	0.54	2223	5.70	3.08	0.54	2262
29	24	6.90	2.90	0.42	2145	6.48	2.72	0.42	2243	6.30	2.65	0.42	2291	6.12	2.57	0.42	2340
29	26	7.26	2.18	0.30	2223	6.84	2.05	0.30	2321	6.63	1.99	0.30	2369	6.42	1.93	0.30	2418
30	18	5.88	4.82	0.82	1911	5.40	4.43	0.82	2028	5.19	4.26	0.82	2067	4.98	4.08	0.82	2106
30	20	6.18	4.33	0.70	1989	5.76	4.03	0.70	2087	5.55	3.89	0.70	2145	5.34	3.74	0.70	2204
30	22	6.54	3.79	0.58	2067	6.12	3.55	0.58	2184	5.91	3.43	0.58	2223	5.70	3.31	0.58	2262
30	24	6.90	3.17	0.46	2145	6.48	2.98	0.46	2243	6.30	2.90	0.46	2291	6.12	2.82	0.46	2340
30	26	7.26	2.47	0.34	2223	6.84	2.33	0.34	2321	6.63	2.25	0.34	2369	6.42	2.18	0.34	2418
31	18	5.88	5.06	0.86	1911	5.40	4.64	0.86	2028	5.19	4.46	0.86	2067	4.98	4.28	0.86	2106
31	20	6.18	4.57	0.74	1989	5.76	4.26	0.74	2087	5.55	4.11	0.74	2145	5.34	3.95	0.74	2204
31	22	6.54	4.05	0.62	2067	6.12	3.79	0.62	2184	5.91	3.66	0.62	2223	5.70	3.53	0.62	2262
31	24	6.90	3.45	0.50	2145	6.48	3.24	0.50	2243	6.30	3.15	0.50	2291	6.12	3.06	0.50	2340
31	26	7.26	2.76	0.38	2223	6.84	2.60	0.38	2321	6.63	2.52	0.38	2369	6.42	2.44	0.38	2418
32	18	5.88	5.29	0.90	1911	5.40	4.86	0.90	2028	5.19	4.67	0.90	2067	4.98	4.48	0.90	2106
32	20	6.18	4.82	0.78	1989	5.76	4.49	0.78	2087	5.55	4.33	0.78	2145	5.34	4.17	0.78	2204
32	22	6.54	4.32	0.66	2067	6.12	4.04	0.66	2184	5.91	3.90	0.66	2223	5.70	3.76	0.66	2262
32	24	6.90	3.73	0.54	2145	6.48	3.50	0.54	2243	6.30	3.40	0.54	2291	6.12	3.30	0.54	2340
32	26	7.26	3.05	0.42	2223	6.84	2.87	0.42	2321	6.63	2.78	0.42	2369	6.42	2.70	0.42	2418

NOTE Q : Total capacity (kW) SHF : Sensible heat factor DB : Dry-bulb temperature
SHC : Sensible heat capacity (kW) INPUT : Total power input (W) WB : Wet-bulb temperature

PERFORMANCE DATA COOL operation at Rated frequency

MSZ-GA71VA: MUZ-GA71VA

CAPACITY:7.1(kW) SHF:0.63 INPUT:2420(W)

		OUTDOOR DB(°C)															
INDOOR DB(°C)	INDOOR WB(°C)	21				25				27				30			
		Q	SHC	SHF	INPUT	Q	SHC	SHF	INPUT	Q	SHC	SHF	INPUT	Q	SHC	SHF	INPUT
21	18	8.34	3.75	0.45	1952	7.99	3.59	0.45	2050	7.67	3.45	0.45	2147	7.38	3.32	0.45	2245
21	20	8.70	2.87	0.33	2050	8.34	2.75	0.33	2172	8.09	2.67	0.33	2220	7.81	2.58	0.33	2318
22	18	8.34	4.09	0.49	1952	7.99	3.91	0.49	2050	7.67	3.76	0.49	2147	7.38	3.62	0.49	2245
22	20	8.70	3.22	0.37	2050	8.34	3.09	0.37	2172	8.09	2.99	0.37	2220	7.81	2.89	0.37	2318
22	22	9.05	2.26	0.25	2123	8.73	2.18	0.25	2257	8.52	2.13	0.25	2318	8.17	2.04	0.25	2416
23	18	8.34	4.42	0.53	1952	7.99	4.23	0.53	2050	7.67	4.06	0.53	2147	7.38	3.91	0.53	2245
23	20	8.70	3.57	0.41	2050	8.34	3.42	0.41	2172	8.09	3.32	0.41	2220	7.81	3.20	0.41	2318
23	22	9.05	2.63	0.29	2123	8.73	2.53	0.29	2257	8.52	2.47	0.29	2318	8.17	2.37	0.29	2416
24	18	8.34	4.76	0.57	1952	7.99	4.55	0.57	2050	7.67	4.37	0.57	2147	7.38	4.21	0.57	2245
24	20	8.70	3.91	0.45	2050	8.34	3.75	0.45	2172	8.09	3.64	0.45	2220	7.81	3.51	0.45	2318
24	22	9.05	2.99	0.33	2123	8.73	2.88	0.33	2257	8.52	2.81	0.33	2318	8.17	2.69	0.33	2416
24	24	9.51	2.00	0.21	2220	9.16	1.92	0.21	2342	8.95	1.88	0.21	2416	8.66	1.82	0.21	2538
25	18	8.34	5.09	0.61	1952	7.99	4.87	0.61	2050	7.67	4.68	0.61	2147	7.38	4.50	0.61	2245
25	20	8.70	4.26	0.49	2050	8.34	4.09	0.49	2172	8.09	3.97	0.49	2220	7.81	3.83	0.49	2318
25	22	9.05	3.35	0.37	2123	8.73	3.23	0.37	2257	8.52	3.15	0.37	2318	8.17	3.02	0.37	2416
25	24	9.51	2.38	0.25	2220	9.16	2.29	0.25	2342	8.95	2.24	0.25	2416	8.66	2.17	0.25	2538
26	18	8.34	5.42	0.65	1952	7.99	5.19	0.65	2050	7.67	4.98	0.65	2147	7.38	4.80	0.65	2245
26	20	8.70	4.61	0.53	2050	8.34	4.42	0.53	2172	8.09	4.29	0.53	2220	7.81	4.14	0.53	2318
26	22	9.05	3.71	0.41	2123	8.73	3.58	0.41	2257	8.52	3.49	0.41	2318	8.17	3.35	0.41	2416
26	24	9.51	2.76	0.29	2220	9.16	2.66	0.29	2342	8.95	2.59	0.29	2416	8.66	2.51	0.29	2538
26	26	9.80	1.67	0.17	2342	9.51	1.62	0.17	2464	9.37	1.59	0.17	2538	9.09	1.54	0.17	2611
27	18	8.34	5.76	0.69	1952	7.99	5.51	0.69	2050	7.67	5.29	0.69	2147	7.38	5.09	0.69	2245
27	20	8.70	4.96	0.57	2050	8.34	4.76	0.57	2172	8.09	4.61	0.57	2220	7.81	4.45	0.57	2318
27	22	9.05	4.07	0.45	2123	8.73	3.93	0.45	2257	8.52	3.83	0.45	2318	8.17	3.67	0.45	2416
27	24	9.51	3.14	0.33	2220	9.16	3.02	0.33	2342	8.95	2.95	0.33	2416	8.66	2.86	0.33	2538
27	26	9.80	2.06	0.21	2342	9.51	2.00	0.21	2464	9.37	1.97	0.21	2538	9.09	1.91	0.21	2611
28	18	8.34	6.09	0.73	1952	7.99	5.83	0.73	2050	7.67	5.60	0.73	2147	7.38	5.39	0.73	2245
28	20	8.70	5.31	0.61	2050	8.34	5.09	0.61	2172	8.09	4.94	0.61	2220	7.81	4.76	0.61	2318
28	22	9.05	4.44	0.49	2123	8.73	4.28	0.49	2257	8.52	4.17	0.49	2318	8.17	4.00	0.49	2416
28	24	9.51	3.52	0.37	2220	9.16	3.39	0.37	2342	8.95	3.31	0.37	2416	8.66	3.20	0.37	2538
28	26	9.80	2.45	0.25	2342	9.51	2.38	0.25	2464	9.37	2.34	0.25	2538	9.09	2.27	0.25	2611
29	18	8.34	6.42	0.77	1952	7.99	6.15	0.77	2050	7.67	5.90	0.77	2147	7.38	5.69	0.77	2245
29	20	8.70	5.65	0.65	2050	8.34	5.42	0.65	2172	8.09	5.26	0.65	2220	7.81	5.08	0.65	2318
29	22	9.05	4.80	0.53	2123	8.73	4.63	0.53	2257	8.52	4.52	0.53	2318	8.17	4.33	0.53	2416
29	24	9.51	3.90	0.41	2220	9.16	3.76	0.41	2342	8.95	3.67	0.41	2416	8.66	3.55	0.41	2538
29	26	9.80	2.84	0.29	2342	9.51	2.76	0.29	2464	9.37	2.72	0.29	2538	9.09	2.64	0.29	2611
30	18	8.34	6.76	0.81	1952	7.99	6.47	0.81	2050	7.67	6.21	0.81	2147	7.38	5.98	0.81	2245
30	20	8.70	6.00	0.69	2050	8.34	5.76	0.69	2172	8.09	5.58	0.69	2220	7.81	5.39	0.69	2318
30	22	9.05	5.16	0.57	2123	8.73	4.98	0.57	2257	8.52	4.86	0.57	2318	8.17	4.65	0.57	2416
30	24	9.51	4.28	0.45	2220	9.16	4.12	0.45	2342	8.95	4.03	0.45	2416	8.66	3.90	0.45	2538
30	26	9.80	3.23	0.33	2342	9.51	3.14	0.33	2464	9.37	3.09	0.33	2538	9.09	3.00	0.33	2611
31	18	8.34	7.09	0.85	1952	7.99	6.79	0.85	2050	7.67	6.52	0.85	2147	7.38	6.28	0.85	2245
31	20	8.70	6.35	0.73	2050	8.34	6.09	0.73	2172	8.09	5.91	0.73	2220	7.81	5.70	0.73	2318
31	22	9.05	5.52	0.61	2123	8.73	5.33	0.61	2257	8.52	5.20	0.61	2318	8.17	4.98	0.61	2416
31	24	9.51	4.66	0.49	2220	9.16	4.49	0.49	2342	8.95	4.38	0.49	2416	8.66	4.24	0.49	2538
31	26	9.80	3.63	0.37	2342	9.51	3.52	0.37	2464	9.37	3.47	0.37	2538	9.09	3.36	0.37	2611
32	18	8.34	7.42	0.89	1952	7.99	7.11	0.89	2050	7.67	6.82	0.89	2147	7.38	6.57	0.89	2245
32	20	8.70	6.70	0.77	2050	8.34	6.42	0.77	2172	8.09	6.23	0.77	2220	7.81	6.01	0.77	2318
32	22	9.05	5.88	0.65	2123	8.73	5.68	0.65	2257	8.52	5.54	0.65	2318	8.17	5.31	0.65	2416
32	24	9.51	5.04	0.53	2220	9.16	4.85	0.53	2342	8.95	4.74	0.53	2416	8.66	4.59	0.53	2538
32	26	9.80	4.02	0.41	2342	9.51	3.90	0.41	2464	9.37	3.84	0.41	2538	9.09	3.73	0.41	2611

NOTE Q : Total capacity (kW) SHF : Sensible heat factor DB : Dry-bulb temperature
SHC : Sensible heat capacity (kW) INPUT : Total power input (W) WB : Wet-bulb temperature

PERFORMANCE DATA COOL operation at Rated frequency

MSZ-GA71VA: MUZ-GA71VA

CAPACITY:7.1(kW) SHF:0.63 INPUT:2420(W)

		OUTDOOR DB(°C)															
INDOOR DB(°C)	INDOOR WB(°C)	35				40				43				46			
		Q	SHC	SHF	INPUT	Q	SHC	SHF	INPUT	Q	SHC	SHF	INPUT	Q	SHC	SHF	INPUT
21	18	6.96	3.13	0.45	2391	6.39	2.88	0.45	2538	6.14	2.76	0.45	2586	5.89	2.65	0.45	2635
21	20	7.31	2.41	0.33	2489	6.82	2.25	0.33	2611	6.57	2.17	0.33	2684	6.32	2.09	0.33	2757
22	18	6.96	3.41	0.49	2391	6.39	3.13	0.49	2538	6.14	3.01	0.49	2586	5.89	2.89	0.49	2635
22	20	7.31	2.71	0.37	2489	6.82	2.52	0.37	2611	6.57	2.43	0.37	2684	6.32	2.34	0.37	2757
22	22	7.74	1.93	0.25	2586	7.24	1.81	0.25	2733	6.99	1.75	0.25	2782	6.75	1.69	0.25	2830
23	18	6.96	3.69	0.53	2391	6.39	3.39	0.53	2538	6.14	3.25	0.53	2586	5.89	3.12	0.53	2635
23	20	7.31	3.00	0.41	2489	6.82	2.79	0.41	2611	6.57	2.69	0.41	2684	6.32	2.59	0.41	2757
23	22	7.74	2.24	0.29	2586	7.24	2.10	0.29	2733	6.99	2.03	0.29	2782	6.75	1.96	0.29	2830
24	18	6.96	3.97	0.57	2391	6.39	3.64	0.57	2538	6.14	3.50	0.57	2586	5.89	3.36	0.57	2635
24	20	7.31	3.29	0.45	2489	6.82	3.07	0.45	2611	6.57	2.96	0.45	2684	6.32	2.84	0.45	2757
24	22	7.74	2.55	0.33	2586	7.24	2.39	0.33	2733	6.99	2.31	0.33	2782	6.75	2.23	0.33	2830
24	24	8.17	1.71	0.21	2684	7.67	1.61	0.21	2806	7.46	1.57	0.21	2867	7.24	1.52	0.21	2928
25	18	6.96	4.24	0.61	2391	6.39	3.90	0.61	2538	6.14	3.75	0.61	2586	5.89	3.59	0.61	2635
25	20	7.31	3.58	0.49	2489	6.82	3.34	0.49	2611	6.57	3.22	0.49	2684	6.32	3.10	0.49	2757
25	22	7.74	2.86	0.37	2586	7.24	2.68	0.37	2733	6.99	2.59	0.37	2782	6.75	2.50	0.37	2830
25	24	8.17	2.04	0.25	2684	7.67	1.92	0.25	2806	7.46	1.86	0.25	2867	7.24	1.81	0.25	2928
26	18	6.96	4.52	0.65	2391	6.39	4.15	0.65	2538	6.14	3.99	0.65	2586	5.89	3.83	0.65	2635
26	20	7.31	3.88	0.53	2489	6.82	3.61	0.53	2611	6.57	3.48	0.53	2684	6.32	3.35	0.53	2757
26	22	7.74	3.17	0.41	2586	7.24	2.97	0.41	2733	6.99	2.87	0.41	2782	6.75	2.77	0.41	2830
26	24	8.17	2.37	0.29	2684	7.67	2.22	0.29	2806	7.46	2.16	0.29	2867	7.24	2.10	0.29	2928
26	26	8.59	1.46	0.17	2782	8.09	1.38	0.17	2904	7.85	1.33	0.17	2965	7.60	1.29	0.17	3026
27	18	6.96	4.80	0.69	2391	6.39	4.41	0.69	2538	6.14	4.24	0.69	2586	5.89	4.07	0.69	2635
27	20	7.31	4.17	0.57	2489	6.82	3.89	0.57	2611	6.57	3.74	0.57	2684	6.32	3.60	0.57	2757
27	22	7.74	3.48	0.45	2586	7.24	3.26	0.45	2733	6.99	3.15	0.45	2782	6.75	3.04	0.45	2830
27	24	8.17	2.69	0.33	2684	7.67	2.53	0.33	2806	7.46	2.46	0.33	2867	7.24	2.39	0.33	2928
27	26	8.59	1.80	0.21	2782	8.09	1.70	0.21	2904	7.85	1.65	0.21	2965	7.60	1.60	0.21	3026
28	18	6.96	5.08	0.73	2391	6.39	4.66	0.73	2538	6.14	4.48	0.73	2586	5.89	4.30	0.73	2635
28	20	7.31	4.46	0.61	2489	6.82	4.16	0.61	2611	6.57	4.01	0.61	2684	6.32	3.85	0.61	2757
28	22	7.74	3.79	0.49	2586	7.24	3.55	0.49	2733	6.99	3.43	0.49	2782	6.75	3.31	0.49	2830
28	24	8.17	3.02	0.37	2684	7.67	2.84	0.37	2806	7.46	2.76	0.37	2867	7.24	2.68	0.37	2928
28	26	8.59	2.15	0.25	2782	8.09	2.02	0.25	2904	7.85	1.96	0.25	2965	7.60	1.90	0.25	3026
29	18	6.96	5.36	0.77	2391	6.39	4.92	0.77	2538	6.14	4.73	0.77	2586	5.89	4.54	0.77	2635
29	20	7.31	4.75	0.65	2489	6.82	4.43	0.65	2611	6.57	4.27	0.65	2684	6.32	4.11	0.65	2757
29	22	7.74	4.10	0.53	2586	7.24	3.84	0.53	2733	6.99	3.71	0.53	2782	6.75	3.57	0.53	2830
29	24	8.17	3.35	0.41	2684	7.67	3.14	0.41	2806	7.46	3.06	0.41	2867	7.24	2.97	0.41	2928
29	26	8.59	2.49	0.29	2782	8.09	2.35	0.29	2904	7.85	2.28	0.29	2965	7.60	2.20	0.29	3026
30	18	6.96	5.64	0.81	2391	6.39	5.18	0.81	2538	6.14	4.97	0.81	2586	5.89	4.77	0.81	2635
30	20	7.31	5.05	0.69	2489	6.82	4.70	0.69	2611	6.57	4.53	0.69	2684	6.32	4.36	0.69	2757
30	22	7.74	4.41	0.57	2586	7.24	4.13	0.57	2733	6.99	3.99	0.57	2782	6.75	3.84	0.57	2830
30	24	8.17	3.67	0.45	2684	7.67	3.45	0.45	2806	7.46	3.35	0.45	2867	7.24	3.26	0.45	2928
30	26	8.59	2.84	0.33	2782	8.09	2.67	0.33	2904	7.85	2.59	0.33	2965	7.60	2.51	0.33	3026
31	18	6.96	5.91	0.85	2391	6.39	5.43	0.85	2538	6.14	5.22	0.85	2586	5.89	5.01	0.85	2635
31	20	7.31	5.34	0.73	2489	6.82	4.98	0.73	2611	6.57	4.79	0.73	2684	6.32	4.61	0.73	2757
31	22	7.74	4.72	0.61	2586	7.24	4.42	0.61	2733	6.99	4.27	0.61	2782	6.75	4.11	0.61	2830
31	24	8.17	4.00	0.49	2684	7.67	3.76	0.49	2806	7.46	3.65	0.49	2867	7.24	3.55	0.49	2928
31	26	8.59	3.18	0.37	2782	8.09	2.99	0.37	2904	7.85	2.90	0.37	2965	7.60	2.81	0.37	3026
32	18	6.96	6.19	0.89	2391	6.39	5.69	0.89	2538	6.14	5.47	0.89	2586	5.89	5.24	0.89	2635
32	20	7.31	5.63	0.77	2489	6.82	5.25	0.77	2611	6.57	5.06	0.77	2684	6.32	4.87	0.77	2757
32	22	7.74	5.03	0.65	2586	7.24	4.71	0.65	2733	6.99	4.55	0.65	2782	6.75	4.38	0.65	2830
32	24	8.17	4.33	0.53	2684	7.67	4.06	0.53	2806	7.46	3.95	0.53	2867	7.24	3.84	0.53	2928
32	26	8.59	3.52	0.41	2782	8.09	3.32	0.41	2904	7.85	3.22	0.41	2965	7.60	3.11	0.41	3026

NOTE Q : Total capacity (kW) SHF : Sensible heat factor DB : Dry-bulb temperature
SHC : Sensible heat capacity (kW) INPUT : Total power input (W) WB : Wet-bulb temperature

PERFORMANCE DATA HEAT operation at Rated frequency

MSZ-GA50VA : MUZ-GA50VA

CAPACITY:5.9(kW) INPUT:1630(W)

	OUTDOOR WB(°C)													
INDOOR DB(°C)	-10		-5		0		5		10		15		20	
	Q	INPUT	Q	INPUT	Q	INPUT	Q	INPUT	Q	INPUT	Q	INPUT	Q	INPUT
15	3.72	1099	4.48	1318	5.25	1487	6.02	1606	6.79	1707	7.49	1758	8.26	1791
21	3.54	1183	4.25	1403	5.02	1555	5.72	1673	6.49	1758	7.20	1808	7.94	1876
26	3.19	1268	3.95	1487	4.66	1639	5.43	1758	6.20	1842	6.90	1893	7.67	1944

MSZ-GA60VA : MUZ-GA60VA

CAPACITY:6.8(kW) INPUT:1940(W)

	OUTDOOR WB(°C)													
INDOOR DB(°C)	-10		-5		0		5		10		15		20	
	Q	INPUT	Q	INPUT	Q	INPUT	Q	INPUT	Q	INPUT	Q	INPUT	Q	INPUT
15	4.28	1294	5.17	1552	6.05	1751	6.94	1891	7.82	2010	8.64	2070	9.52	2109
21	4.08	1393	4.90	1652	5.78	1831	6.60	1970	7.48	2070	8.30	2129	9.15	2209
26	3.67	1493	4.56	1751	5.37	1930	6.26	2070	7.14	2169	7.96	2229	8.84	2289

MSZ-GA71VA : MUZ-GA71VA

CAPACITY:8.1(kW) INPUT:2450(W)

	OUTDOOR WB(°C)													
INDOOR DB(°C)	-10		-5		0		5		10		15		20	
	Q	INPUT	Q	INPUT	Q	INPUT	Q	INPUT	Q	INPUT	Q	INPUT	Q	INPUT
15	5.10	1625	6.16	1950	7.21	2200	8.26	2375	9.32	2525	10.29	2600	11.34	2650
21	4.86	1750	5.83	2075	6.89	2300	7.86	2475	8.91	2600	9.88	2675	10.89	2775
26	4.37	1875	5.43	2200	6.40	2425	7.45	2600	8.51	2725	9.48	2800	10.53	2875

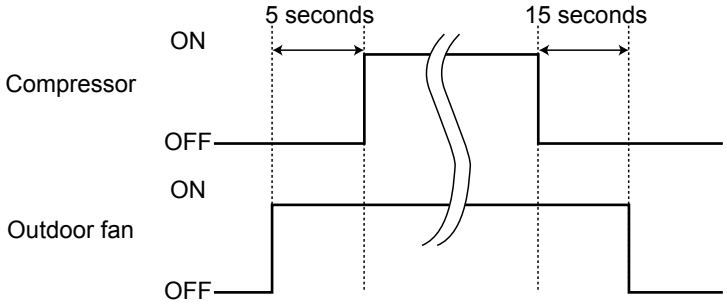
NOTE Q: Total capacity (kW) INPUT : Total power input (W) DB: Dry-bulb temperature WB: Wet-bulb temperature

9 ACTUATOR CONTROL

MUZ-GA50VA
MUZ-GA60VA
MUZ-GA71VA

9-1. OUTDOOR FAN MOTOR CONTROL

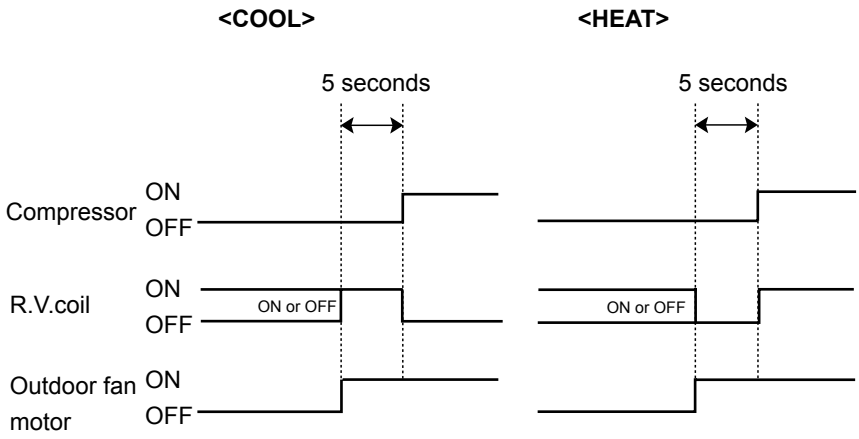
The fan motor turns ON/OFF, interlocking with the compressor.
[ON] The fan motor turns ON 5 seconds before the compressor starts up.
[OFF] The fan motor turns OFF 15 seconds after the compressor has stopped running.



9-2. R.V. COIL CONTROL

Heating · · · · · · · · · · · · · · · · · · ON
Cooling · · · · · · · · · · · · · · · · · · OFF
Dry · OFF

NOTE: The 4-way valve reverses for 5 seconds right before start-up of the compressor.



9-3. RELATION BETWEEN MAIN SENSOR AND ACTUATOR

Relation between main sensor and actuator.

Sensor	Purpose	Actuator			
		Compressor	LEV	Outdoor fan motor	R.V. coil
Discharge temperature thermistor	Protection	○	○		
Indoor coil temperature thermistor	Defrosting Protection	○	○	○	
Defrost thermistor	Defrosting	○	○	○	○
Fin temperature thermistor	Protection	○		○	
Outdoor heat exchanger temperature	Protection	○	○	○	
Ambient temperature thermistor	Protection	○	○	○	

10 SERVICE FUNCTIONS

Contents of “SERVICE FUNCTIONS” have been removed.

11 TROUBLESHOOTING

MUZ-GA50VA
MUZ-GA60VA
MUZ-GA71VA

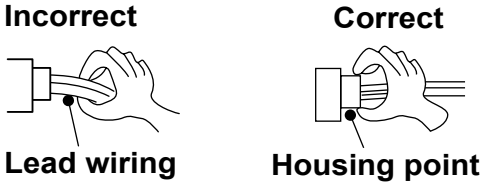
11-1. CAUTIONS ON TROUBLESHOOTING

1. Before troubleshooting, check the following

1) Check the power supply voltage.
2) Check the indoor/outdoor connecting wire for miswiring.

2. Take care of the following during servicing

1) Before servicing the air conditioner, be sure to turn OFF the main unit first with the remote controller, and after confirming the horizontal vane is closed, turn OFF the breaker and/or disconnect the power plug.
2) Be sure to turn OFF the power supply before removing the front panel, the cabinet, the top panel, and the electronic control P.C. board.
3) When removing the electrical parts, be careful to the residual voltage of smoothing capacitor.
4) When removing the electronic control P.C. board, hold the edge of the board with care NOT to apply stress on the components.
5) When connecting or disconnecting the connectors, hold the housing of the connector. DO NOT pull the lead wires.



3. Troubleshooting procedure

1) First, check if the OPERATION INDICATOR lamp on the indoor unit is flashing on and off to indicate an abnormality. To make sure, check how many times the OPERATION INDICATOR lamp is flashing on and off before starting service work.
2) Before servicing, check that the connector and terminal are connected properly.
3) When the electronic control P.C. board is supposed to be defective, check the copper foil pattern for disconnection and the components for bursting and discoloration.
4) When troubleshooting, refer to 11-2, 11-3 and 11-4.

11-2. FAILURE MODE RECALL FUNCTION

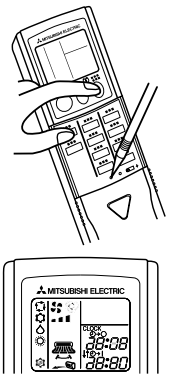
Outline of the function

This air conditioner can memorize the abnormal condition which has occurred once.

Even though LED indication listed on the troubleshooting check table (11-4.) disappears, the memorized failure details can be recalled.

This mode is very useful when the unit needs to be repaired for the abnormality which does not recur.

1. Flow chart of the indoor/outdoor unit failure mode recall function



※1. Regardless of normal or abnormal condition, a short beep is emitted once the signal is received.

Operational procedure

The cause of abnormality cannot be found because the abnormality does not recur.

Setting up the failure mode recall function

Turn ON the power supply.
<Preparation of the remote controller>
① While pressing both OPERATION SELECT button and TOO COOL button on the remote controller at the same time, press RESET button.
② First, release RESET button.
Hold down the other two buttons for another 3 seconds. Confirm that the indicators on the LCD screen shown in the right figures are all displayed. Then release the buttons.

Press OPERATE/STOP (ON/OFF) button of the remote controller (the set temperature is displayed) with the remote controller headed towards the indoor unit. ※1

Does the left lamp of OPERATION INDICATOR lamp on the indoor unit blink at the interval of 0.5 seconds?
Blinks: Either indoor or outdoor unit is abnormal. Beep is emitted at the same timing as the blinking of the left lamp of OPERATION INDICATOR lamp. ※2

No (OFF) → Indoor unit is normal.
But the outdoor unit might be abnormal because there are some abnormalities that can't be recalled with this way.
Confirm if outdoor unit is abnormal according to the detailed outdoor unit failure mode recall function.(Refer to 11-2.2)

Judgment of indoor/outdoor abnormality

Yes (Blinks)

Before blinking, does the left lamp of OPERATION INDICATOR lamp stay ON for 3 seconds?
Stays ON for 3 seconds (without beep): The outdoor unit is abnormal.

Yes → The outdoor unit is abnormal.
Check the blinking pattern, and confirm the abnormal point with the outdoor unit failure mode table (Refer to 11-2.3).
Make sure to check at least two consecutive blinking cycles. ※3

No → The indoor unit is abnormal.
Check the blinking pattern, and confirm the abnormal point with the indoor unit failure mode table (Refer to indoor unit service manual.)
Make sure to check at least two consecutive blinking cycles. ※2

Releasing the failure mode recall function

Release the failure mode recall function by the following procedures.
Turn OFF the power supply and turn it ON again.
Press RESET button of the remote controller.

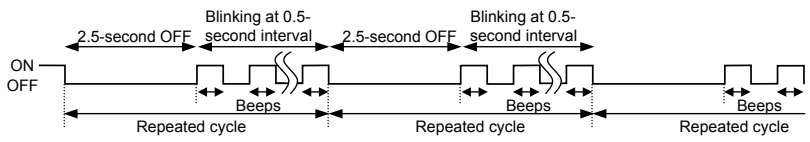
Repair the defective parts.

Deleting the memorized abnormal condition

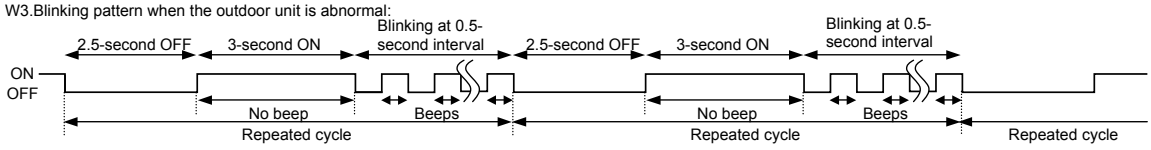
① After repairing the unit, recall the failure mode again according to "Setting up the failure mode recall function" mentioned above.
② Press OPERATE/STOP (ON/OFF) button of the remote controller (the set temperature is displayed) with the remote controller headed towards the indoor unit.
③ Press EMERGENCY OPERATION switch so that the memorized abnormal condition is deleted.
④ Release the failure mode recall function according to "Releasing the failure mode recall function" mentioned above.

NOTE 1. Make sure to release the failure mode recall function once it is set up, otherwise the unit cannot operate properly.
2. If the abnormal condition is not deleted from the memory, the last abnormal condition is kept memorized.

※2. Blinking pattern when the indoor unit is abnormal:



W3.Blinking pattern when the outdoor unit is abnormal:



2. Flow chart of the detailed outdoor unit failure mode recall function

Operational procedure

The outdoor unit might be abnormal.
Confirm if outdoor unit is abnormal according to the following procedures.

↓

Confirm that the remote controller is in the failure mode recall function.

↓

With the remote controller headed towards the indoor unit, press TOO COOL or TOO WARM button to adjust the set temperature to 25°C. ※1

※1. Regardless of normal or abnormal condition, 2 short beeps are emitted as the signal is received.

↓

Does left lamp of OPERATION INDICATOR lamp on the indoor unit blink at the interval of 0.5 seconds?
Blinks°C The outdoor unit is abnormal.
Beep is emitted at the same timing as the blinking of the left lamp of OPERATION INDICATOR lamp. ※2

No (OFF) → The outdoor unit is normal.

↓ Yes (Blinks)

The outdoor unit is abnormal.
Check the blinking pattern, and confirm the abnormal point with the outdoor unit failure mode table (Refer to 11-2.3.).
Make sure to check at least two consecutive blinking cycles. ※2

↓

Releasing the failure mode recall function

Release the failure mode recall function by the following procedures.
Turn OFF the power supply and turn it ON again.
Press RESET button of the remote controller.

Release the failure mode recall function according to the left mentioned procedure.

↓

Repair the defective parts.

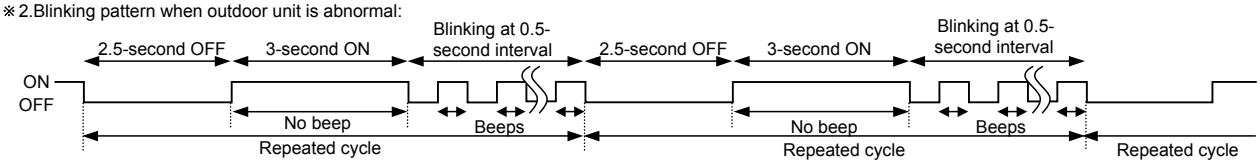
↓

Deleting the memorized abnormal condition

①After repairing the unit, recall the failure mode again according to "Setting up the failure mode recall function" mentioned above.
②Press OPERATE/STOP (ON/OFF) button of the remote controller (the set temperature is displayed) with the remote controller headed towards the indoor unit.
③Press EMERGENCY OPERATION switch so that the memorized abnormal condition is deleted.
④Release the failure mode recall function according to "Releasing the failure mode recall function" mentioned above.

NOTE1. Make sure to release the failure mode recall function once it is set up, otherwise the unit cannot operate properly.
2. If the abnormal condition is not deleted from the memory, the last abnormal condition is kept memorized.

※2.Blinking pattern when outdoor unit is abnormal:



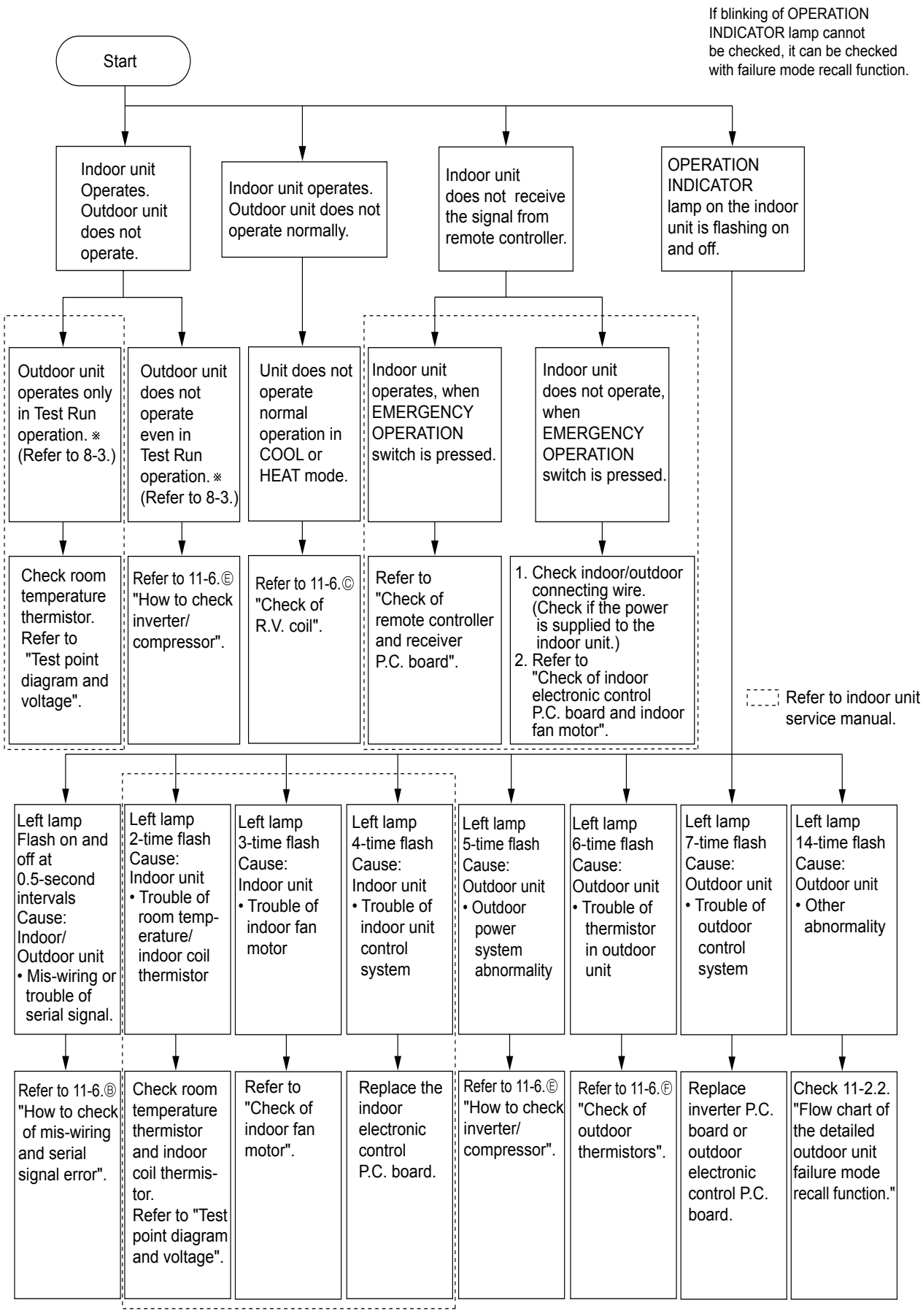
3. Outdoor failure mode table

The left lamp of OPERATION INDICAOR lamp(Indoor unit)	Abnormal point (Failure mode/protection)	LED indication (Outdoor P.C. board) LED 1	LED 2	Condition	Remedy	Indoor/outdoor unit failure mode recall function
OFF	None (Normal)	—	—	———	———	———
2-time flash	Outdoor power system	Lighting	Lighting	Overcurrent protection stop is continuously performed 3 times within 1 minute after the compressor gets started, or when converter protection stop or bus-bar voltage protection stop is continuously performed 3 times within 3 minutes after start-up.	• Check the connection of the compressor connecting wire. • Refer to 11-4.Ⓔ "How to check inverter/compressor". • Check the stop valve.	○
3-time flash	Discharge temperature thermistor	Lighting	Once	Thermistor shorts or opens during compressor running.	• Refer to 11-6.Ⓕ "Check of outdoor thermistors".	○
	Defrost thermistor	Lighting	Once			
	Ambient temperature thermistor	Lighting	Twice			
	Fin temperature thermistor	Lighting	3 times			
	P.C. board temperature thermistor	Lighting	4 times		• Replace the outdoor electronic control P.C. board.	
	Outdoor heat exchanger temperature thermistor	Lighting	9 times		• Refer to 11-6.Ⓕ "Check of outdoor thermistors".	
4-time flash	Overcurrent	Once	Goes out	28A current flows into intelligent power module.	• Reconnect compressor connector. • Refer to 11-6.Ⓔ "How to check inverter/ compressor." • Check the stop valve.	———
5-time flash	Discharge temperature	Lighting	Lighting	Discharge temperature exceeds 116 °C during operation. Compressor can restart if discharge temperature thermistor reads 100°C or less 3 minutes later.	•Check refrigerant circuit and refrigerant amount. • Refer to 11-6.Ⓓ "Check of LEV".	———
6-time flash	High pressure	Lighting	Lighting	High-pressure is detected with the high-pressure switch (HPS) during operation.	•Check refrigerant circuit and refrigerant amount. • Check the stop valve.	———
				The outdoor heat exchanger temperature exceeds 70°Cduring cooling or the indoor gas pipe temperature exceeds 70°C during heating.		
7-time flash	Fin temperature	3 times	Goes out	The fin temperature exceeds 87°C during operation.	• Check around outdoor unit. • Check outdoot unit air passage. • Refer to 11-6.Ⓖ "Check of outdoor fan motor".	———
	P.C. board temperature	4 times	Goes out	The P.C. board temperature exceeds 70°C during operation.		
8-time flash	Outdoor fan motor	Lighting	Lighting	Failure occurs continuously 3 times within 30 seconds after the fan gets started.	• Refer to 11-6.Ⓖ "Check of outdoor fan motor".	———
9-time flash	Nonvolatile memory data	Lighting	5 times	Nonvolatile memory data cannot be read properly.	• Replace the outdoor electronic control P.C. board.	○
10-time flash	Discharge temperature	Lighting	Lighting	The frequency of the compressor is kept 80Hz or more and the discharge temperature is kept under 39°C for more than 20 minutes.	•Check refrigerant circuit and refrigerant amount. • Refer to 11-6.Ⓓ "Check of LEV".	———

The left lamp of OPERATION INDICATOR lamp(Indoor unit)	Abnormal point (Failure mode/protection)	LED indication (Outdoor P.C. board)		Condition	Remedy	Indoor/outdoor unit failure mode recall function
		LED 1	LED 2			
11-time flash	Communication error between P.C. boards	Lighting	6 times	Communication error occurs between the electronic control P.C. board and power board for more than 10 seconds.	• Check the connecting wire between outdoor electronic control P.C. board and power board.	———
				The communication between boards protection stop is continuously performed twice.		○
	Current sensor	Lighting	7 times	A short or open circuit is detected in the current sensor during compressor operating.	• Replace the power board.	———
				Current sensor protection stop is continuously performed twice.		○
	Zero cross detecting circuit	5 times	Goes out	Zero cross signal cannot be detected while the compressor is operating.	• Check the connecting wire among electronic control P.C. board, noise filter P.C. board and power board.	———
				The protection stop of the zero cross detecting circuit is continuously performed 10 times.		○
	Converter	5 times	Goes out	A failure is detected in the operation of the converter during operation.	• Check the voltage of power supply. • Replace the power board.	———
	Bus-bar voltage (1)	5 times	Goes out	The bus-bar voltage exceeds 400V or falls to 200V or below during compressor operating.		
	Bus-bar voltage (2) ※ Even if this protection stop is performed continuously 3 times, it does not mean the abnormality in outdoor power system.	6 times	Goes out	The bus-bar voltage exceeds 400V or falls to 50V or below during compressor operating.	• Check the voltage of power supply. • Replace the outdoor electronic control P.C. board.	

NOTE: Blinking patterns of this mode differ from the ones of Troubleshooting check table (11-4.).

11-3. INSTRUCTION OF TROUBLESHOOTING


If blinking of OPERATION INDICATOR lamp cannot be checked, it can be checked with failure mode recall function.
Start
Indoor unit Operates. Outdoor unit does not operate.
Indoor unit operates. Outdoor unit does not operate normally.
Indoor unit does not receive the signal from remote controller.
OPERATION INDICATOR lamp on the indoor unit is flashing on and off.
Outdoor unit operates only in Test Run operation. ※ (Refer to 8-3.)
Outdoor unit does not operate even in Test Run operation. ※ (Refer to 8-3.)
Unit does not operate normal operation in COOL or HEAT mode.
Indoor unit operates, when EMERGENCY OPERATION switch is pressed.
Indoor unit does not operate, when EMERGENCY OPERATION switch is pressed.
Check room temperature thermistor. Refer to "Test point diagram and voltage".
Refer to 11-6.Ⓔ "How to check inverter/ compressor".
Refer to 11-6.Ⓒ "Check of R.V. coil".
Refer to "Check of remote controller and receiver P.C. board".
1. Check indoor/outdoor connecting wire. (Check if the power is supplied to the indoor unit.)
2. Refer to "Check of indoor electronic control P.C. board and indoor fan motor".
Refer to indoor unit service manual.
Left lamp Flash on and off at 0.5-second intervals Cause: Indoor/ Outdoor unit • Mis-wiring or trouble of serial signal.
Left lamp 2-time flash Cause: Indoor unit • Trouble of room temp- erature/ indoor coil thermistor
Left lamp 3-time flash Cause: Indoor unit • Trouble of indoor fan motor
Left lamp 4-time flash Cause: Indoor unit • Trouble of indoor unit control system
Left lamp 5-time flash Cause: Outdoor unit • Outdoor power system abnormality
Left lamp 6-time flash Cause: Outdoor unit • Trouble of thermistor in outdoor unit
Left lamp 7-time flash Cause: Outdoor unit • Trouble of outdoor control system
Left lamp 14-time flash Cause: Outdoor unit • Other abnormality
Refer to 11-6.Ⓑ "How to check of mis-wiring and serial signal error".
Check room temperature thermistor and indoor coil thermis- tor. Refer to "Test point diagram and voltage".
Refer to "Check of indoor fan motor".
Replace the indoor electronic control P.C. board.
Refer to 11-6.Ⓔ "How to check inverter/ compressor".
Refer to 11-6.Ⓕ "Check of outdoor thermistors".
Replace inverter P.C. board or outdoor electronic control P.C. board.
Check 11-2.2. "Flow chart of the detailed outdoor unit failure mode recall function."

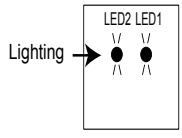
※"Test Run Operation" means the operation within 30 minutes after EMERGENCY OPERATION switch is pressed.

11-4. TROUBLESHOOTING CHECK TABLE

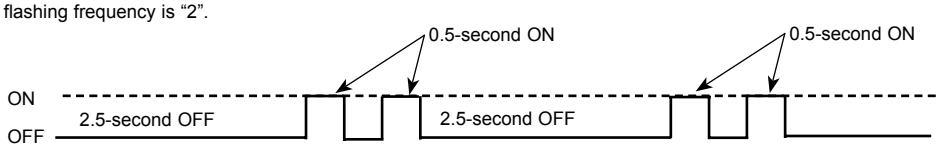
No.	Symptom	Indication		Abnormal point/Condition	Condition	Remedy
		LED1(Red)	LED2(Yellow)			
1	Outdoor unit does not operate.	Lightning	Twice	Outdoor power system	Overcurrent protection stop is continuously performed 3 times within 1 minute after the compressor gets started, or when converter protection stop or bus-bar voltage protection stop is continuously performed 3 times within 3 minutes after start-up.	• Check the connection of the compressor connecting wire. • Refer to 11-6.Ⓔ "How to check inverter/compressor". • Check the stop valve.
2		Lightning	3 times	Discharge temperature thermistor	A short circuit is detected in the thermistor during operation, or an open circuit is detected in the thermistor after 10 minutes of compressor start-up.	• Refer to 11-6.Ⓕ "Check of outdoor thermistors".
3		Lightning	4 times	Fin temperature thermistor	A short or open circuit is detected in the thermistor during operation.	• Refer to 11-6.Ⓕ "Check of outdoor thermistors".
				P.C board temperature thermistor		• Replace the outdoor electronic control P.C. board.
4		Lightning	5 times	Ambient temperature thermistor	A short or open circuit is detected in the thermistor during operation.	• Refer to 11-6.Ⓕ"Check of outdoor thermistors".
				Outdoor heat exchanger temperature thermistor	A short circuit is detected in the thermistor during operation, or an open circuit is detected in the thermistor after 5 minutes (in cooling) and 10 minutes (in heating) of compressor start-up.	
				Defrost thermistor	A short circuit is detected in the thermistor during operation, or an open circuit is detected in the thermistor after 5 minutes of compressor start-up.	
5		Lightning	6 times	Serial signal	The communication fails between the indoor and outdoor unit for 3 minutes.	• Refer to 11-6.Ⓑ "How to check mis-wiring and serial signal error".
6		Lightning	7 times	Nonvolatile memory data	The nonvolatile memory data cannot be read properly.	• Replace the outdoor electronic control P.C. board.
7		Lightning	8 times	Current sensor	Current sensor protection stop is continuously performed twice.	• Replace the power board.
8		Lightning	11 times	Communication error between P.C. boards	The communication protection stop between boards is continuously performed twice.	• Check the connecting wire between outdoor electronic control P.C. board and power board.
9		Lightning	12 times	Zero cross detecting circuit	The protection stop of the zero cross detecting circuit is continuously performed 10 times.	• Check the connecting wire among outdoor electronic control P.C. board, noise filter P.C. board and power board.
10	'Outdoor unit stops and restarts 3 minutes later' is repeated.	Twice	Goes out	IPM protection	Overcurrent is detected after 30 seconds of compressor start-up.	• Reconnect compressor connector. • Refer to 11-6.Ⓔ"How to check inverter/compressor". • Check the stop valve. • Check the power module (PAM module).
				Lock protection	Overcurrent is detected within 30 seconds of compressor start-up.	
11		3 times	Goes out	Discharge temperature protection	Discharge temperature exceeds 116°C during operation and compressor stops. Compressor can restart if discharge temperature thermistor reads 100°C or less 3 minutes later.	• Check the amount of gas and refrigerant circuit. • Refer to 11-6.Ⓓ"Check of LEV".
12		4 times	Goes out	Fin temperature protection	The fin temperature exceeds 87°C during operation.	•Check refrigerant circuit and refrigerant amount. •Refer to 11-6.Ⓖ"Check of outdoor fan motor".
				P.C. board temperature protection	The P.C. board temperature exceeds 70°C during operation.	
13		5 times	Goes out	High-pressure protection	High-pressure is detected with the high-pressure switch (HPS) during operation.	• Check the amount of gas and the refrigerant circuit. • Check stop valve.
					The outdoor heat exchanger temperature exceeds 70°C during cooling or indoor gas pipe temperature exceeds 70°C during heating.	
14		8 times	Goes out	Converter protection	A failure is detected in the operation of the converter during operation.	• Replace the power board.
15		9 times	Goes out	Bus-bar voltage protection (1)	The bus-bar voltage exceeds 400V or falls to 200V or below during compressor operating.	• Check the voltage of power supply. • Replace the power board or the outdoor electronic control P.C. board. • Refer to 11-6.Ⓘ"Check of bus-bar voltage".
				Bus-bar voltage protection (2)	The bus-bar voltage exceeds 400V or falls to 50V or below during compressor operating.	
16		13 times	Goes out	Outdoor fan motor	Failure occurs continuously 3 times within 30 seconds after the fan gets started.	• Refer to 11-6.Ⓖ "Check of outdoor fan motor".
17		Lighting	8 times	Current sensor protection	A short or open circuit is detected in the current sensor during compressor operating.	• Replace the power board.
18		Lighting	11 times	Communication between P.C. boards protection	Communication error occurs between the outdoor electronic control P.C. board and power board for more than 10 seconds.	• Check the connecting wire between outdoor electronic control P.C. board and power board.
19		Lighting	12 times	Zero cross detecting circuit protection	Zero cross signal cannot be detected while the compressor is operating.	• Check the connecting wire among outdoor electronic control P.C. board, noise filter P.C. board and power board.

NOTE 1. The location of LED is illustrated at the right figure. Refer to 11-7.1.
2. LED is lighted during normal operation.

Outdoor electronic control P.C. board (Parts side)



The flashing frequency shows the number of times the LED blinks after every 2.5-second OFF.
(Example) When the flashing frequency is "2".



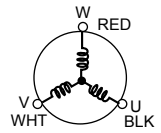
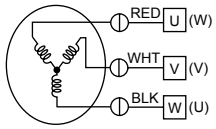
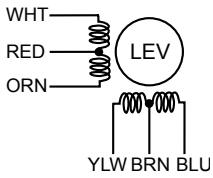
No.	Symptom	Indication		Abnormal point/Condition	Condition	Remedy
		LED1(Red)	LED2(Yellow)			
20	Outdoor unit operates.	Once	Lighting	Primary current protection	The input current exceeds 15A.	These symptoms do not mean any abnormality of the product, but check the following points. • Check if indoor filters are clogged. • Check if refrigerant is short. • Check if indoor/outdoor unit air circulation is short cycled.
				Secondary current protection	The current of the compressor exceeds 15A.	
21		Twice	Lighting	High-pressure protection	The indoor gas pipe temperature exceeds 45°C during heating.	
				Defrosting in cooling	The indoor gas pipe temperature falls 3°C or below during cooling.	
22		3 times	Lighting	Discharge temperature protection	The discharge temperature exceeds 100°C during operation.	• Check refrigerant circuit and refrigerant amount. • Refer to 11-6.ⓓ"Check of LEV". • Refer to 11-6.ⓕ"Check of outdoor thermistors".
23		4 times	Lighting	Low discharge temperature protection	The frequency of the compressor is kept 80Hz or more and the discharge temperature is kept under 39°C for more than 20 minutes.	• Refer to 11-6.ⓓ"Check of LEV". • Check refrigerant circuit and refrigerant amount.
24		5 times	Lighting	Cooling high-pressure protection	The outdoor heat exchanger temperature exceeds 58°C during operation.	This symptom does not mean any abnormality of the product, but check the following points. • Check if indoor filters are clogged. • Check if refrigerant is short. • Check if indoor/outdoor unit air circulation is short cycled.
25	Outdoor unit operates	9 times	Lighting	Inverter check mode	The unit is operated with emergency operation switch.	—
26		Lighting	Lighting	Normal	—	—

11-5. TROUBLE CRITERION OF MAIN PARTS

MUZ-GA50VA
MUZ-GA60VA
MUZ-GA71VA

<table>
<tr><th>Part name</th><th>Check method and criterion</th><th>Figure</th></tr>
<tr><td>Defrost thermistor (RT61)
Ambient temperature thermistor (RT65)
Outdoor heat exchanger temperature thermistor (RT68)</td><td>Measure the resistance with a tester.

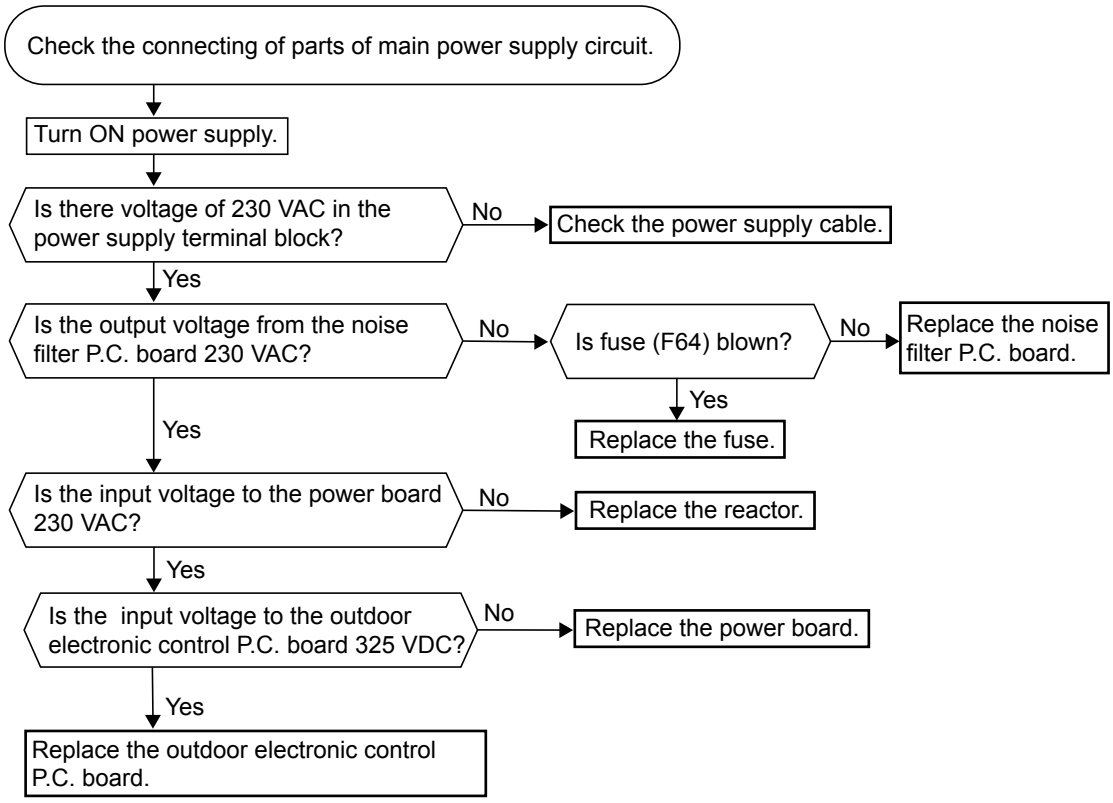
Refer to 11-7. “Test point diagram and voltage”, 1. “Outdoor electronic control P.C. board”, for the chart of thermistor.</td><td></td></tr>
<tr><td>Discharge temperature thermistor (RT62)
Fin temperature thermistor (RT64)</td><td>Measure the resistance with a tester.
Before measurement, hold the thermistor with your hands to warm it up.

Refer to 11-7. “Test point diagram and voltage”,1. “Outdoor electronic control P.C. board”, for the chart of thermistor.</td><td></td></tr>
<tr><td>Compressor</td><td>Measure the resistance between terminals using a tester.
(Winding temperature: -10 °C ~ 40 °C)
<table>
<tr><th colspan="3">Normal</th></tr>
<tr><th>GA50
GA60VA-E1,E2</th><th>GA60VA-E3</th><th>GA71VA</th></tr>
<tr><td>0.40 Ω ~ 0.49 Ω</td><td>0.86 Ω ~ 1.06 Ω</td><td>1.29 Ω ~ 1.49 Ω</td></tr>
</table></td><td> 
</td></tr>
<tr><td>Outdoor fan motor</td><td>Measure the resistance between lead wires using a tester.
(Part temperature: -10 °C ~ 40 °C)
<table>
<tr><th>Color of lead wire</th><th>Normal</th></tr>
<tr><td>RED - BLK</td><td rowspan="3">13.4 Ω ~ 16.4 Ω</td></tr>
<tr><td>BLK - WHT</td></tr>
<tr><td>WHT - RED</td></tr>
</table></td><td> 
</td></tr>
<tr><td>R. V. coil</td><td>Measure the resistance using a tester. (Part temperature: -10 °C ~ 40 °C)
<table>
<tr><th colspan="2">Normal</th></tr>
<tr><th>MUZ-GA60VA-E3</th><th>Other models</th></tr>
<tr><td>1.32 kΩ ~ 1.62 kΩ</td><td>2.6 kΩ ~ 3.3 kΩ</td></tr>
</table></td><td></td></tr>
<tr><td>Linear expansion valve</td><td>Measure the resistance using a tester. (Part temperature: -10 °C ~ 40 °C)
<table>
<tr><th>Color of lead wire</th><th>Normal</th></tr>
<tr><td>WHT - RED</td><td rowspan="4">37.4 Ω ~ 53.9 Ω</td></tr>
<tr><td>RED - ORN</td></tr>
<tr><td>YLW - BRN</td></tr>
<tr><td>BRN - BLU</td></tr>
</table></td><td> 
</td></tr>
<tr><td>High pressure switch (HPS)
MUZ-GA60VA-E3
MUZ-GA71VA</td><td>
<table>
<tr><th colspan="2">Pressure</th></tr>
<tr><td>3.7 ± 0.15 MPa</td><td>Close</td></tr>
<tr><td>4.8 $^{+0.95}_{-1.9}$ MPa</td><td>Open</td></tr>
</table></td><td></td></tr>
</table>

11-6. TROUBLESHOOTING FLOW

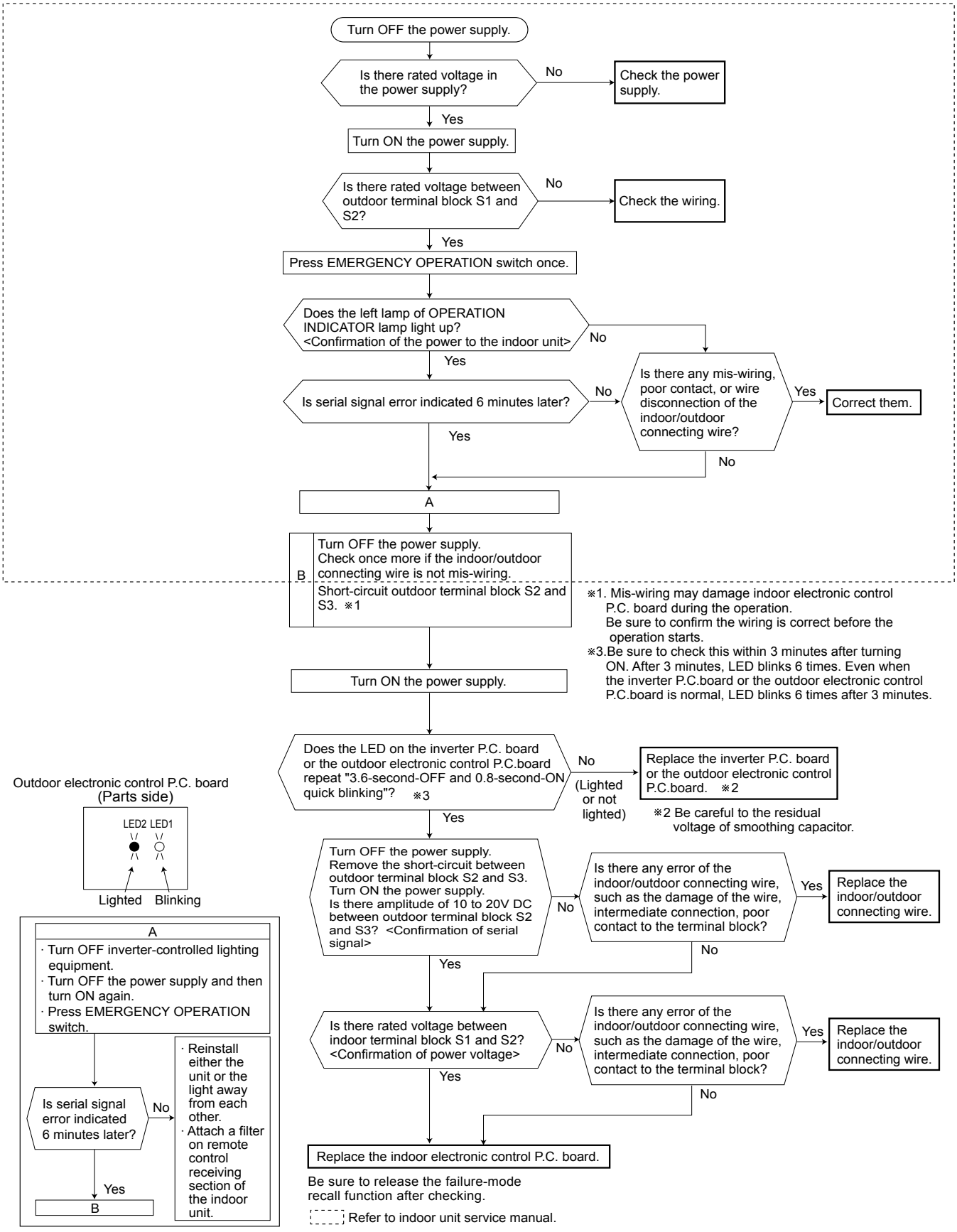
Outdoor unit does not operate.

Ⓐ Check of power supply


Check the connecting of parts of main power supply circuit.
Turn ON power supply.
Is there voltage of 230 VAC in the power supply terminal block?
No
Check the power supply cable.
Yes
Is the output voltage from the noise filter P.C. board 230 VAC?
No
Is fuse (F64) blown?
No
Replace the noise filter P.C. board.
Yes
Replace the fuse.
Yes
Is the input voltage to the power board 230 VAC?
No
Replace the reactor.
Yes
Is the input voltage to the outdoor electronic control P.C. board 325 VDC?
No
Replace the power board.
Yes
Replace the outdoor electronic control P.C. board.

- **When unit cannot operate neither by the remote controller nor by EMERGENCY OPERATION switch. Indoor unit does not operate.**
- **When OPERATION INDICATOR lamp flashes ON and OFF every 0.5-second. Outdoor unit does not operate.**

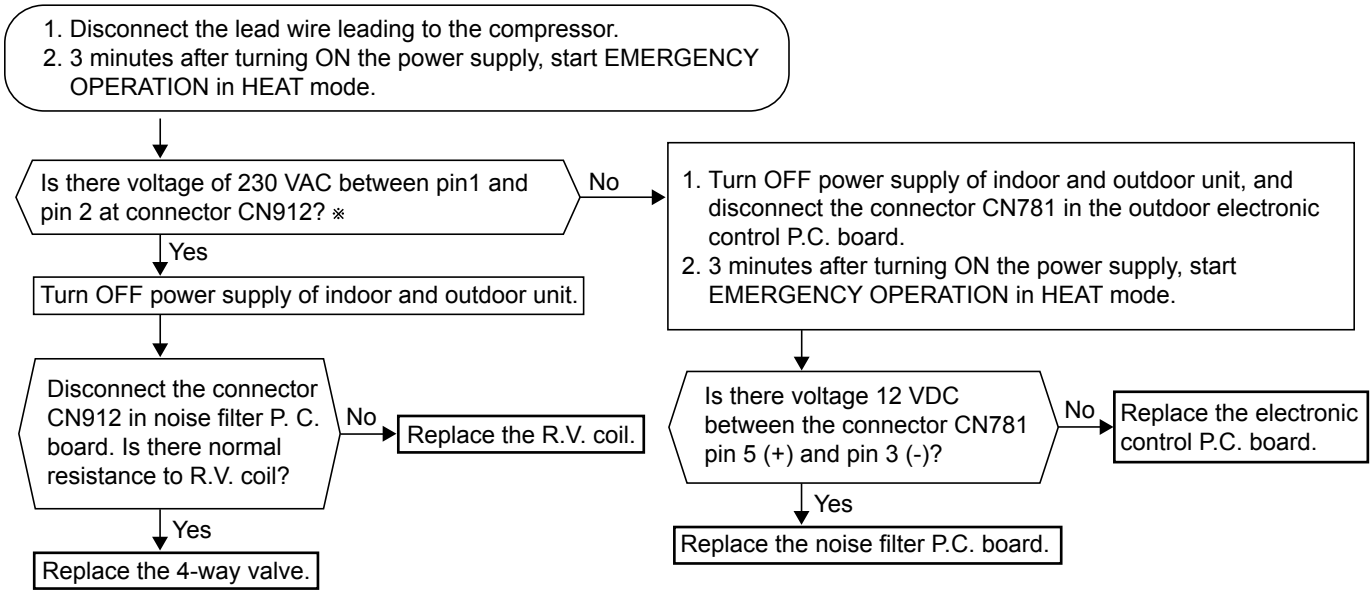
Ⓑ How to check mis-wiring and serial signal error (when outdoor unit does not work)


Turn OFF the power supply.
Is there rated voltage in the power supply?
No
Check the power supply.
Yes
Turn ON the power supply.
Is there rated voltage between outdoor terminal block S1 and S2?
No
Check the wiring.
Yes
Press EMERGENCY OPERATION switch once.
Does the left lamp of OPERATION INDICATOR lamp light up? <Confirmation of the power to the indoor unit>
No
Yes
Is serial signal error indicated 6 minutes later?
No
Is there any mis-wiring, poor contact, or wire disconnection of the indoor/outdoor connecting wire?
Yes
Correct them.
Yes
No
A
B
Turn OFF the power supply.
Check once more if the indoor/outdoor connecting wire is not mis-wiring.
Short-circuit outdoor terminal block S2 and S3. ※1
※1. Mis-wiring may damage indoor electronic control P.C. board during the operation. Be sure to confirm the wiring is correct before the operation starts.
※3.Be sure to check this within 3 minutes after turning ON. After 3 minutes, LED blinks 6 times. Even when the inverter P.C.board or the outdoor electronic control P.C.board is normal, LED blinks 6 times after 3 minutes.
Turn ON the power supply.
Does the LED on the inverter P.C. board or the outdoor electronic control P.C.board repeat "3.6-second-OFF and 0.8-second-ON quick blinking"? ※3
No
(Lighted or not lighted)
Replace the inverter P.C. board or the outdoor electronic control P.C.board. ※2
※2 Be careful to the residual voltage of smoothing capacitor.
Yes
Outdoor electronic control P.C. board
(Parts side)
LED2 LED1
Lighted
Blinking
Turn OFF the power supply.
Remove the short-circuit between outdoor terminal block S2 and S3.
Turn ON the power supply.
Is there amplitude of 10 to 20V DC between outdoor terminal block S2 and S3? <Confirmation of serial signal>
No
Is there any error of the indoor/outdoor connecting wire, such as the damage of the wire, intermediate connection, poor contact to the terminal block?
Yes
Replace the indoor/outdoor connecting wire.
No
Yes
Is there rated voltage between indoor terminal block S1 and S2? <Confirmation of power voltage>
No
Is there any error of the indoor/outdoor connecting wire, such as the damage of the wire, intermediate connection, poor contact to the terminal block?
Yes
Replace the indoor/outdoor connecting wire.
No
Yes
A
· Turn OFF inverter-controlled lighting equipment.
· Turn OFF the power supply and then turn ON again.
· Press EMERGENCY OPERATION switch.
Is serial signal error indicated 6 minutes later?
No
· Reinstall either the unit or the light away from each other.
· Attach a filter on remote control receiving section of the indoor unit.
Yes
B
Replace the indoor electronic control P.C. board.
Be sure to release the failure-mode recall function after checking.
Refer to indoor unit service manual.

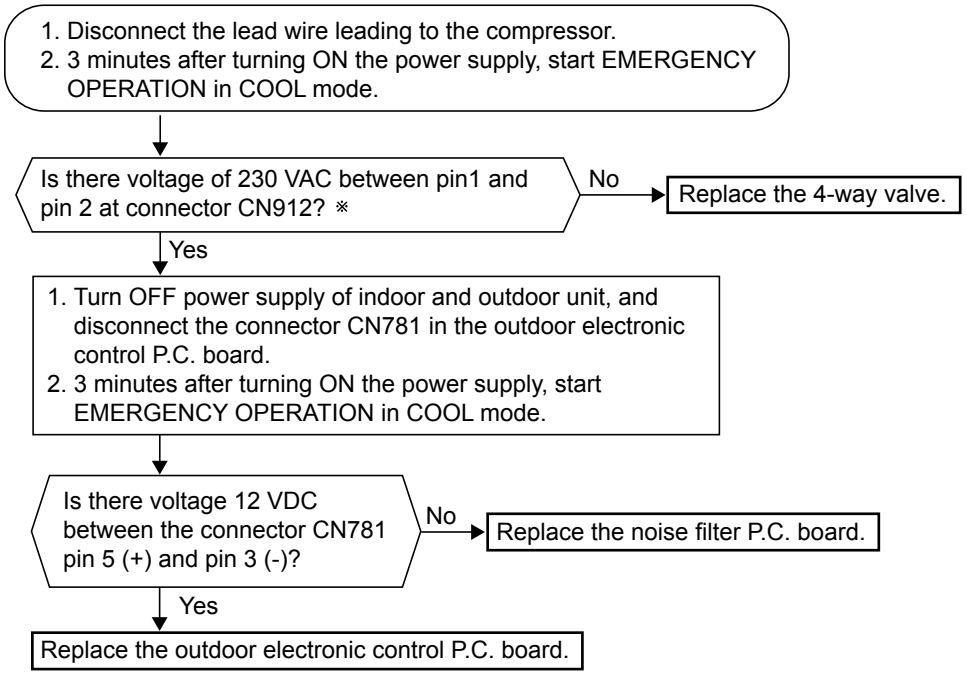
The cooling operation or heating operation does not operate.

© Check of R.V. coil

• When heating operation does not work.


1. Disconnect the lead wire leading to the compressor.
2. 3 minutes after turning ON the power supply, start EMERGENCY OPERATION in HEAT mode.
Is there voltage of 230 VAC between pin1 and pin 2 at connector CN912? ※
No
1. Turn OFF power supply of indoor and outdoor unit, and disconnect the connector CN781 in the outdoor electronic control P.C. board.
2. 3 minutes after turning ON the power supply, start EMERGENCY OPERATION in HEAT mode.
Yes
Turn OFF power supply of indoor and outdoor unit.
Disconnect the connector CN912 in noise filter P. C. board. Is there normal resistance to R.V. coil?
No
Replace the R.V. coil.
Is there voltage 12 VDC between the connector CN781 pin 5 (+) and pin 3 (-)?
No
Replace the electronic control P.C. board.
Yes
Replace the 4-way valve.
Yes
Replace the noise filter P.C. board.

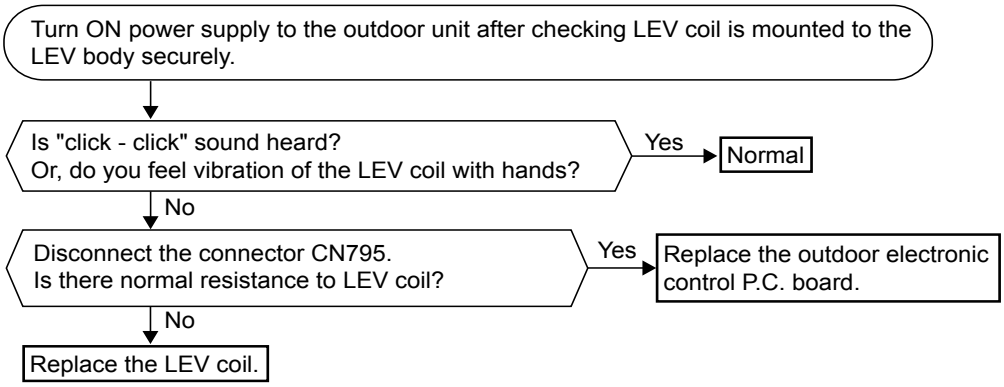
• When cooling operation does not work.


1. Disconnect the lead wire leading to the compressor.
2. 3 minutes after turning ON the power supply, start EMERGENCY OPERATION in COOL mode.
Is there voltage of 230 VAC between pin1 and pin 2 at connector CN912? ※
No
Replace the 4-way valve.
Yes
1. Turn OFF power supply of indoor and outdoor unit, and disconnect the connector CN781 in the outdoor electronic control P.C. board.
2. 3 minutes after turning ON the power supply, start EMERGENCY OPERATION in COOL mode.
Is there voltage 12 VDC between the connector CN781 pin 5 (+) and pin 3 (-)?
No
Replace the noise filter P.C. board.
Yes
Replace the outdoor electronic control P.C. board.

※ If the connector CN912 is not connected or R.V. coil is open, voltage occurs between terminals even when the control is OFF.

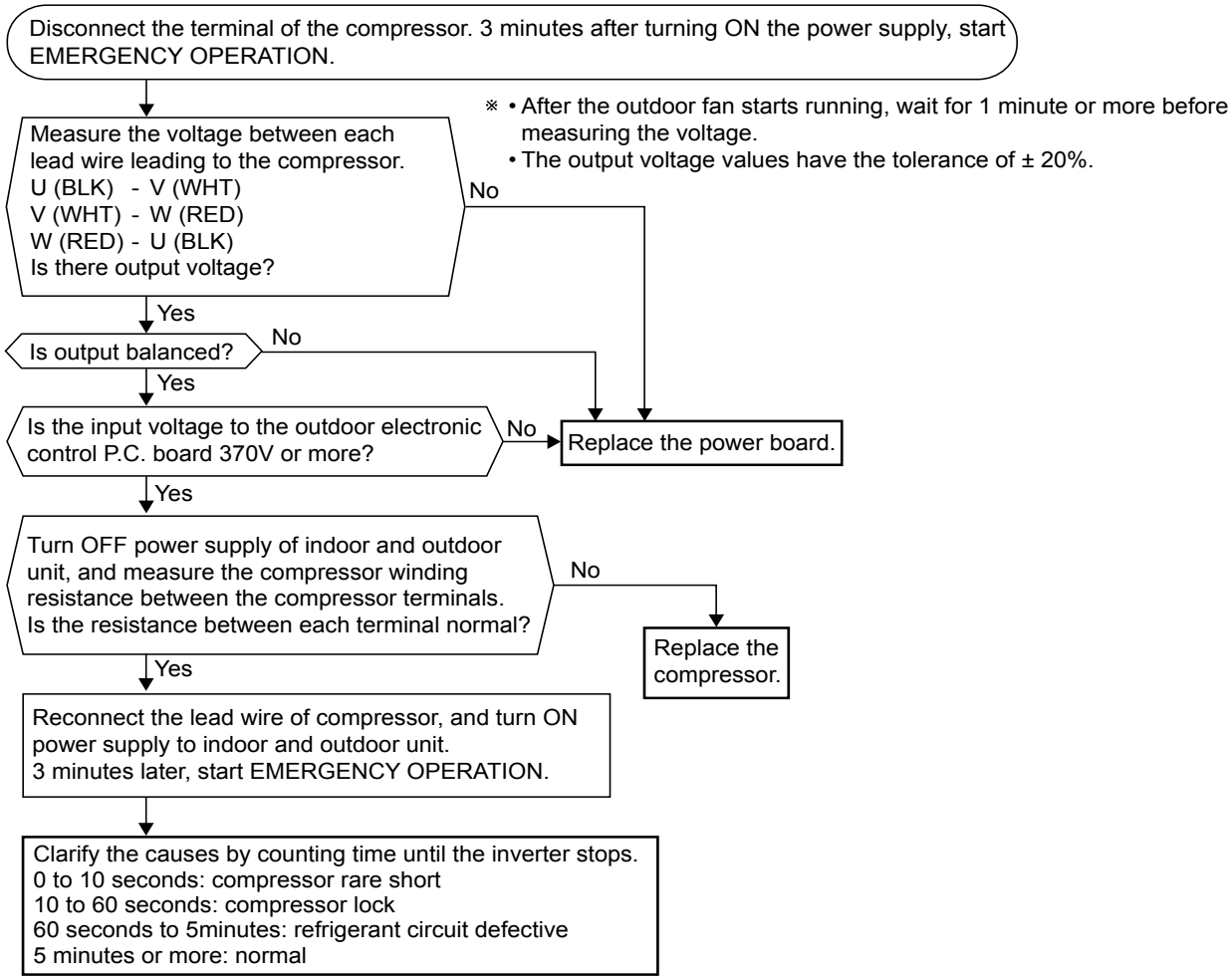
• When cooling, heat exchanger of non-operating indoor unit frosts.
• When heating, non-operating indoor unit gets warm.

Ⓓ Check of LEV


Turn ON power supply to the outdoor unit after checking LEV coil is mounted to the LEV body securely.
Is "click - click" sound heard?
Or, do you feel vibration of the LEV coil with hands?
Yes
Normal
No
Disconnect the connector CN795.
Is there normal resistance to LEV coil?
Yes
Replace the outdoor electronic control P.C. board.
No
Replace the LEV coil.

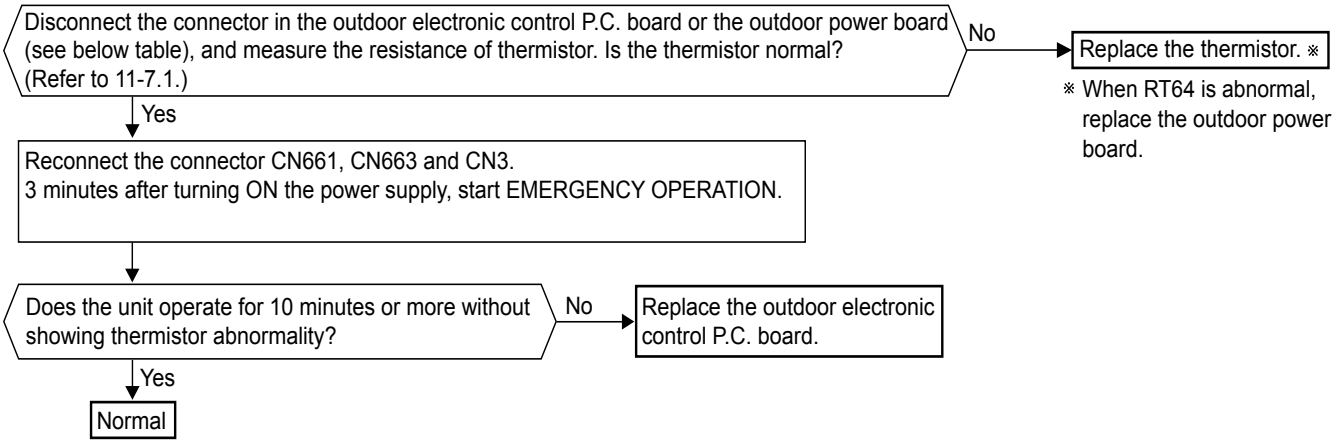
When OPERATION INDICATOR lamp flashes 5-time.
• When heating, room does not get warm.
• When cooling, room does not get cool.

Ⓔ How to check inverter/compressor


Disconnect the terminal of the compressor. 3 minutes after turning ON the power supply, start EMERGENCY OPERATION.
※ • After the outdoor fan starts running, wait for 1 minute or more before measuring the voltage.
• The output voltage values have the tolerance of ± 20%.
Measure the voltage between each lead wire leading to the compressor.
U (BLK) - V (WHT)
V (WHT) - W (RED)
W (RED) - U (BLK)
Is there output voltage?
No
Yes
Is output balanced?
No
Yes
Is the input voltage to the outdoor electronic control P.C. board 370V or more?
No
Replace the power board.
Yes
Turn OFF power supply of indoor and outdoor unit, and measure the compressor winding resistance between the compressor terminals.
Is the resistance between each terminal normal?
No
Replace the compressor.
Yes
Reconnect the lead wire of compressor, and turn ON power supply to indoor and outdoor unit.
3 minutes later, start EMERGENCY OPERATION.
Clarify the causes by counting time until the inverter stops.
0 to 10 seconds: compressor rare short
10 to 60 seconds: compressor lock
60 seconds to 5minutes: refrigerant circuit defective
5 minutes or more: normal

• When OPERATION INDICATOR lamp flashes 6-time.
• When thermistor is abnormal.

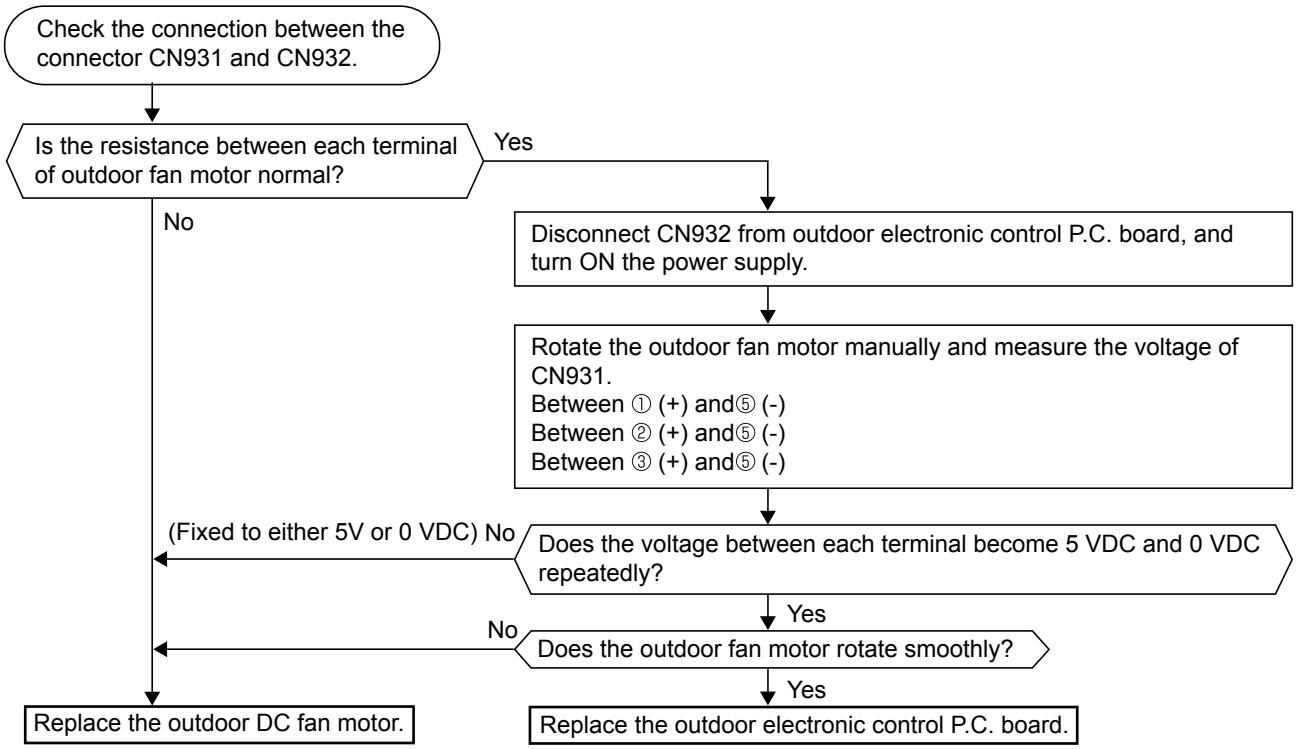
Ⓕ Check of outdoor thermistors


Disconnect the connector in the outdoor electronic control P.C. board or the outdoor power board (see below table), and measure the resistance of thermistor. Is the thermistor normal? (Refer to 11-7.1.)
No
Replace the thermistor. ※
※ When RT64 is abnormal, replace the outdoor power board.
Yes
Reconnect the connector CN661, CN663 and CN3.
3 minutes after turning ON the power supply, start EMERGENCY OPERATION.
Does the unit operate for 10 minutes or more without showing thermistor abnormality?
No
Replace the outdoor electronic control P.C. board.
Yes
Normal

Thermistor	Symbol	Connector, Pin No.	Board
Defrost	RT61	Between CN661 pin1 and pin2	Outdoor electronic control P.C. board
Discharge temperature	RT62	Between CN661 pin3 and pin4	
Outdoor heat exchanger temperature	RT68	Between CN661 pin7 and pin8	
Ambient temperature	RT65	Between CN663 pin1 and pin2	
Fin temperature	RT64	Between CN3 pin1 and pin2	Outdoor power board

• Fan motor does not operate or stops operating shortly after starting the operation.

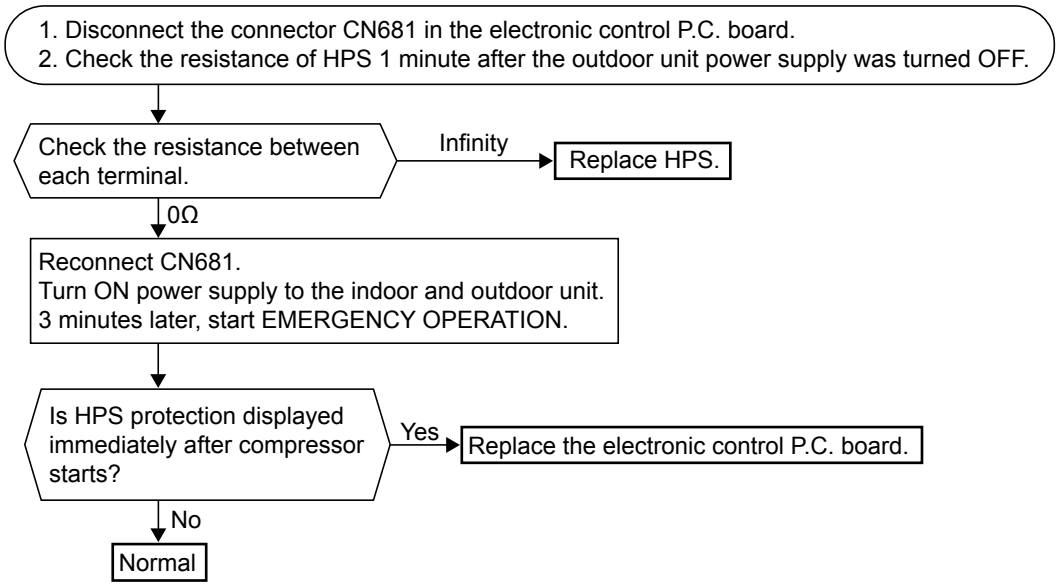
Ⓖ Check of outdoor fan motor


Check the connection between the connector CN931 and CN932.
Is the resistance between each terminal of outdoor fan motor normal?
Yes
No
Disconnect CN932 from outdoor electronic control P.C. board, and turn ON the power supply.
Rotate the outdoor fan motor manually and measure the voltage of CN931.
Between ① (+) and⑤ (-)
Between ② (+) and⑤ (-)
Between ③ (+) and⑤ (-)
(Fixed to either 5V or 0 VDC) No
Does the voltage between each terminal become 5 VDC and 0 VDC repeatedly?
Yes
No
Does the outdoor fan motor rotate smoothly?
Yes
Replace the outdoor DC fan motor.
Replace the outdoor electronic control P.C. board.

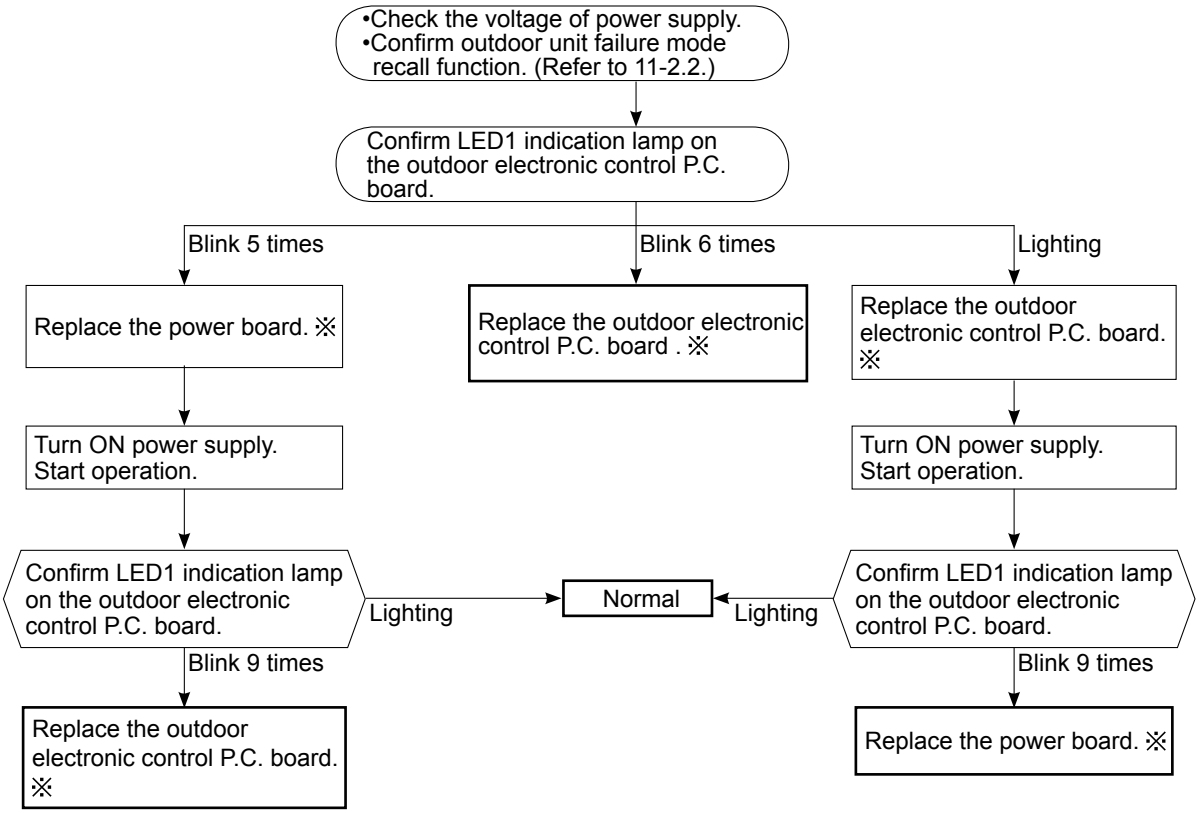
• When the operation frequency does not go up from lowest frequency.

Ⓗ Check of HPS

MUZ-GA60VA- E3
MUZ-GA71VA

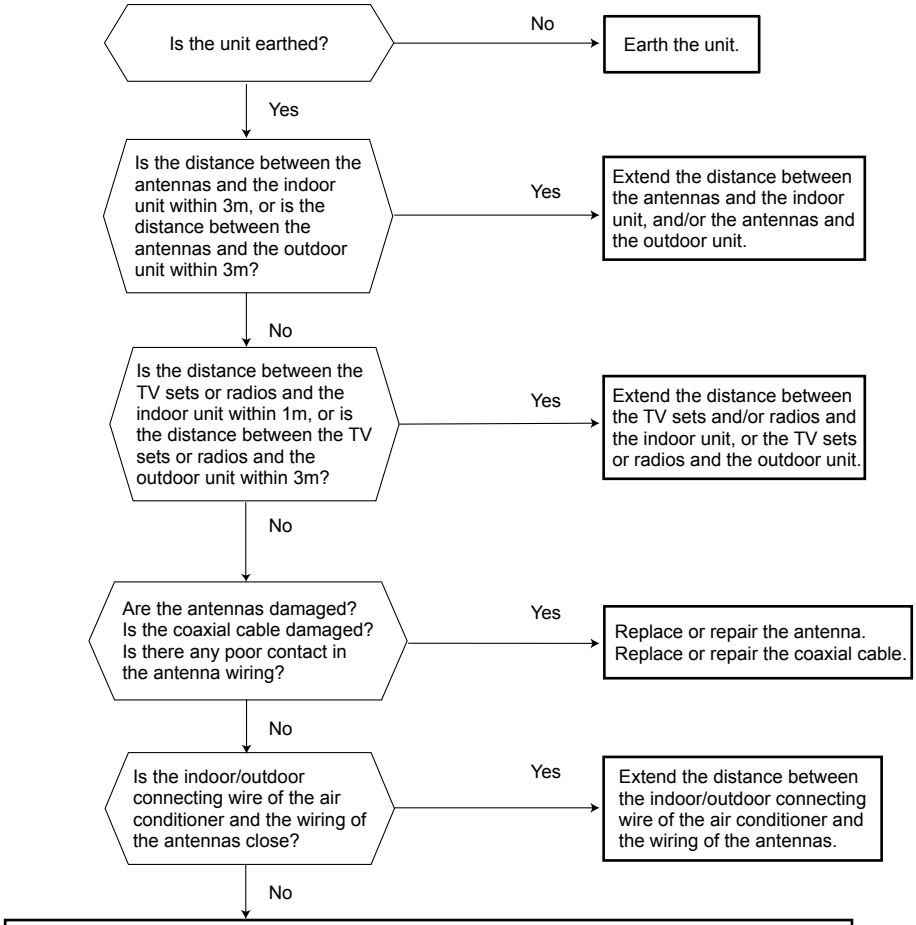

1. Disconnect the connector CN681 in the electronic control P.C. board.
2. Check the resistance of HPS 1 minute after the outdoor unit power supply was turned OFF.
Check the resistance between each terminal.
Infinity
Replace HPS.
0Ω
Reconnect CN681.
Turn ON power supply to the indoor and outdoor unit.
3 minutes later, start EMERGENCY OPERATION.
Is HPS protection displayed immediately after compressor starts?
Yes
Replace the electronic control P.C. board.
No
Normal

Ⓘ Check of bus-bar voltage


•Check the voltage of power supply.
•Confirm outdoor unit failure mode recall function. (Refer to 11-2.2.)
Confirm LED1 indication lamp on the outdoor electronic control P.C. board.
Blink 5 times
Blink 6 times
Lighting
Replace the power board. ※
Replace the outdoor electronic control P.C. board . ※
Replace the outdoor electronic control P.C. board. ※
Turn ON power supply. Start operation.
Turn ON power supply. Start operation.
Confirm LED1 indication lamp on the outdoor electronic control P.C. board.
Lighting
Normal
Lighting
Confirm LED1 indication lamp on the outdoor electronic control P.C. board.
Blink 9 times
Blink 9 times
Replace the outdoor electronic control P.C. board. ※
Replace the power board. ※

※ Turn OFF power supply before removing P.C. board.

Ⓙ Electromagnetic noise enters into TV sets or radios


Is the unit earthed?
No
Earth the unit.
Yes
Is the distance between the antennas and the indoor unit within 3m, or is the distance between the antennas and the outdoor unit within 3m?
Yes
Extend the distance between the antennas and the indoor unit, and/or the antennas and the outdoor unit.
No
Is the distance between the TV sets or radios and the indoor unit within 1m, or is the distance between the TV sets or radios and the outdoor unit within 3m?
Yes
Extend the distance between the TV sets and/or radios and the indoor unit, or the TV sets or radios and the outdoor unit.
No
Are the antennas damaged? Is the coaxial cable damaged? Is there any poor contact in the antenna wiring?
Yes
Replace or repair the antenna. Replace or repair the coaxial cable.
No
Is the indoor/outdoor connecting wire of the air conditioner and the wiring of the antennas close?
Yes
Extend the distance between the indoor/outdoor connecting wire of the air conditioner and the wiring of the antennas.
No

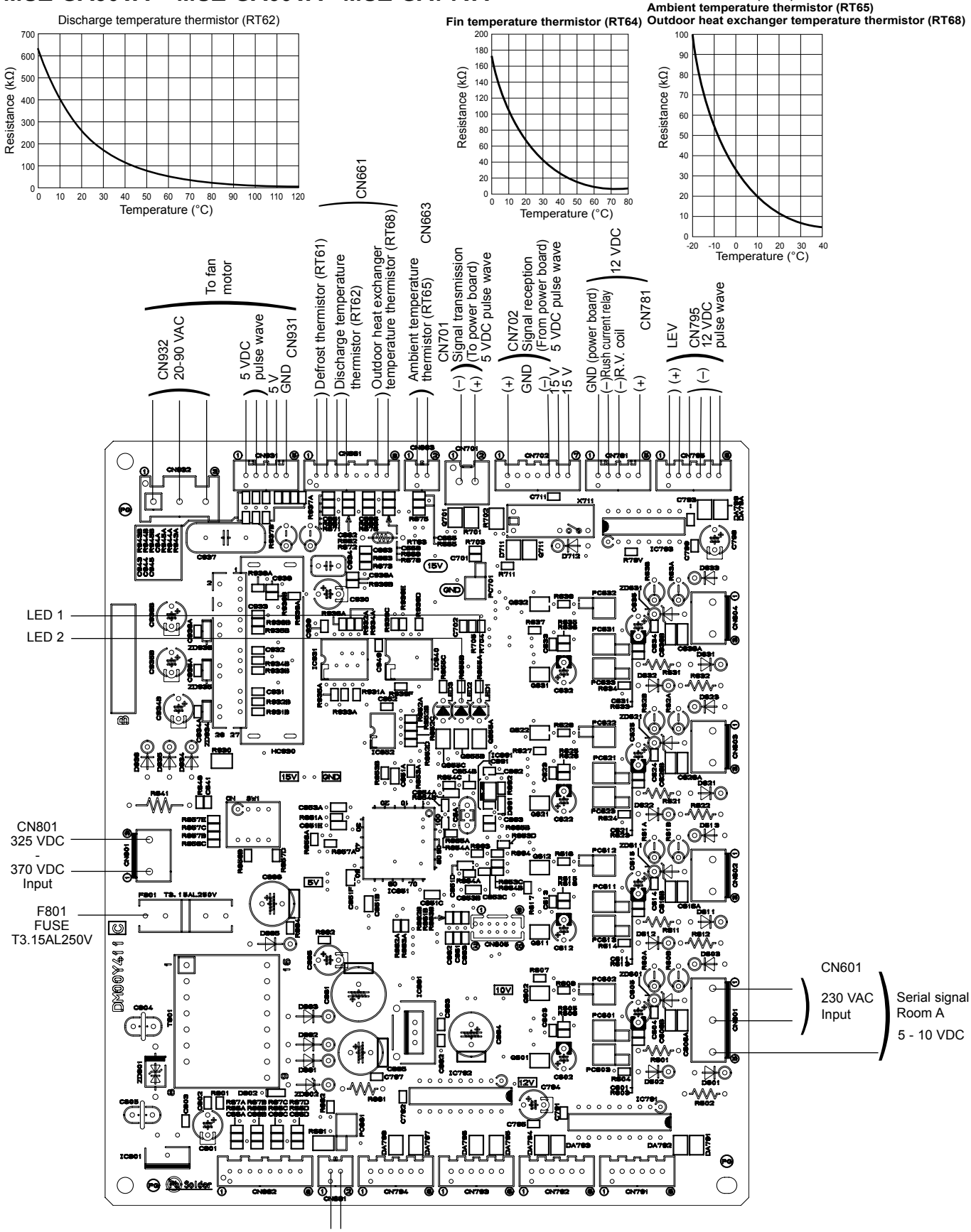
Even if all of the above conditions are fulfilled, the electromagnetic noise may enter, depending on the electric field strength or the installation condition (combination of specific conditions such as antennas or wiring).
Check the followings before asking for service.

1. Devices affected by the electromagnetic noise
   TV sets, radios (FM/AM broadcast, shortwave)
2. Channel, frequency, broadcast station affected by the electromagnetic noise
3. Channel, frequency, broadcast station unaffected by the electromagnetic noise
4. Layout of ;
   indoor/outdoor unit of the air conditioner, indoor/outdoor wiring, earth wire, antennas, wiring from antennas, receiver
5. Electric field intensity of the broadcast station affected by the electromagnetic noise
6. Presence or absence of amplifier such as booster
7. Operation condition of air conditioner when the electromagnetic noise enters in
   1)Turn OFF the power supply once, and then turn ON the power supply. In this situation, check for the electromagnetic noise.
   2)Within 3 minutes after turning ON the power supply, press OPERATE/STOP (ON/OFF) button on the remote controller for power ON, and check for the electromagnetic noise.
   3)After a short time (3 minutes later after turning ON), the outdoor unit starts running. During operation, check for the electromagnetic noise.
   4)Press OPERATE/STOP (ON/OFF) button on the remote controller for power OFF, when the outdoor unit stops but the indoor/outdoor communication still runs on. In this situation, check for the electromagnetic noise.

11-7. TEST POINT DIAGRAM AND VOLTAGE

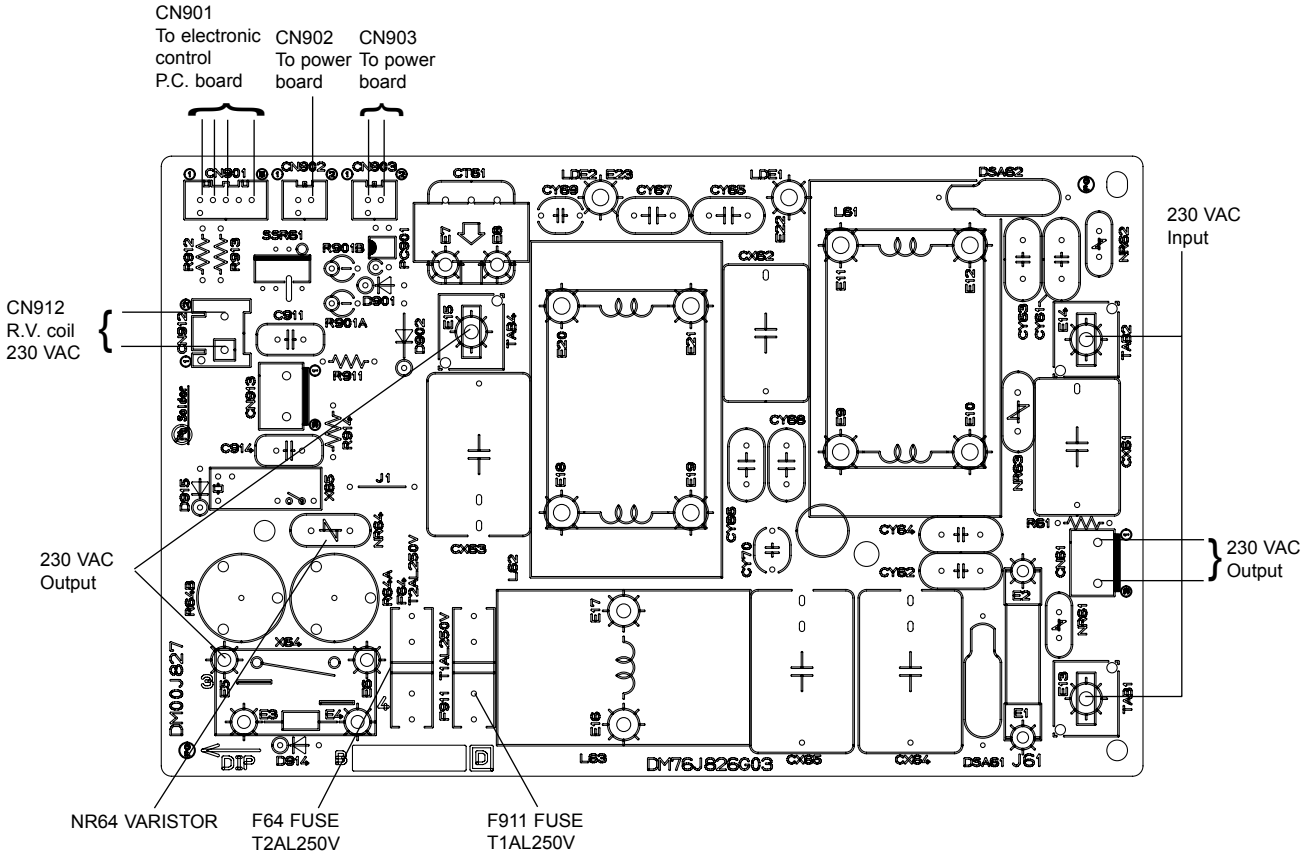
1. Outdoor electronic control P.C. board

MUZ-GA50VA MUZ-GA60VA MUZ-GA71VA



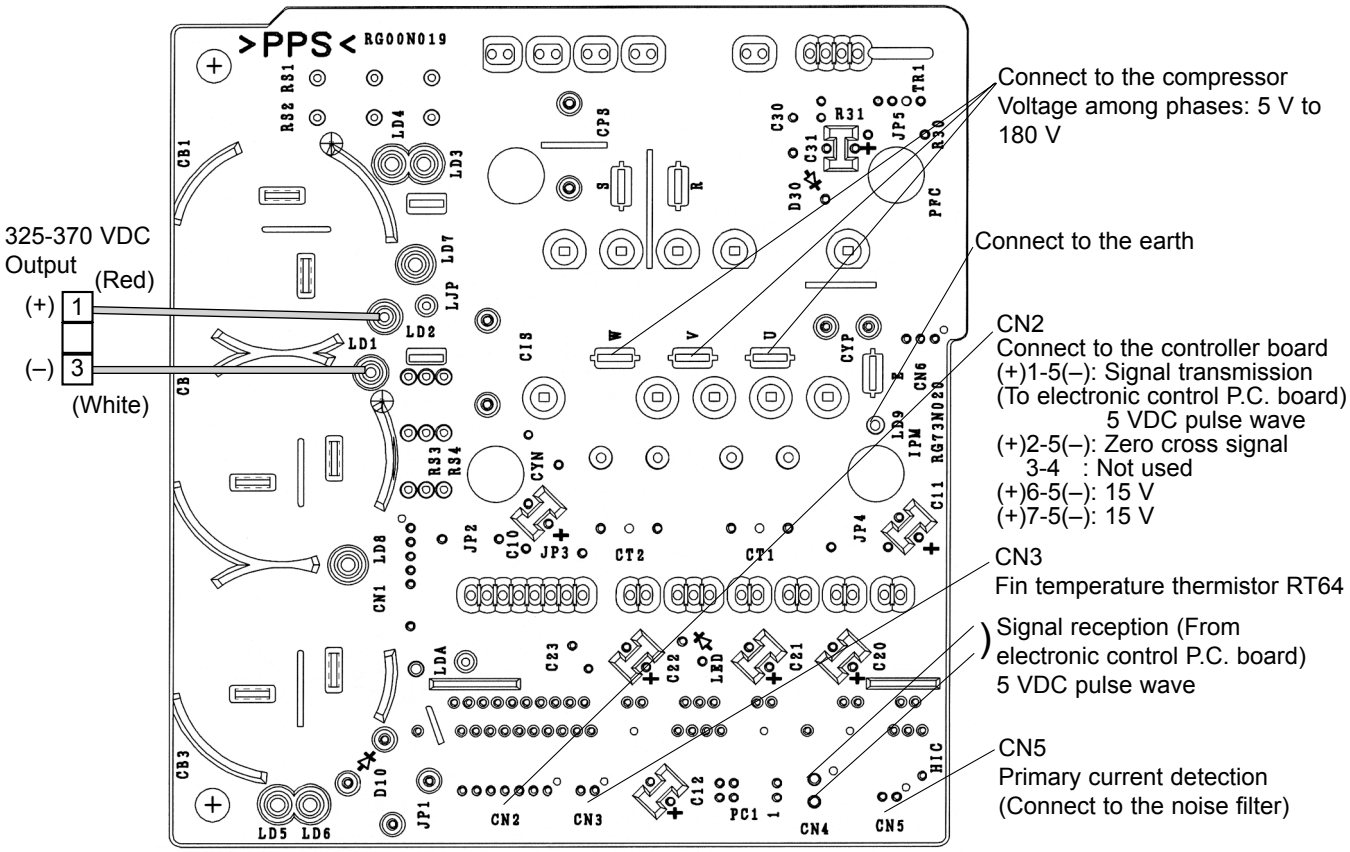
2. Noise filter P.C. board

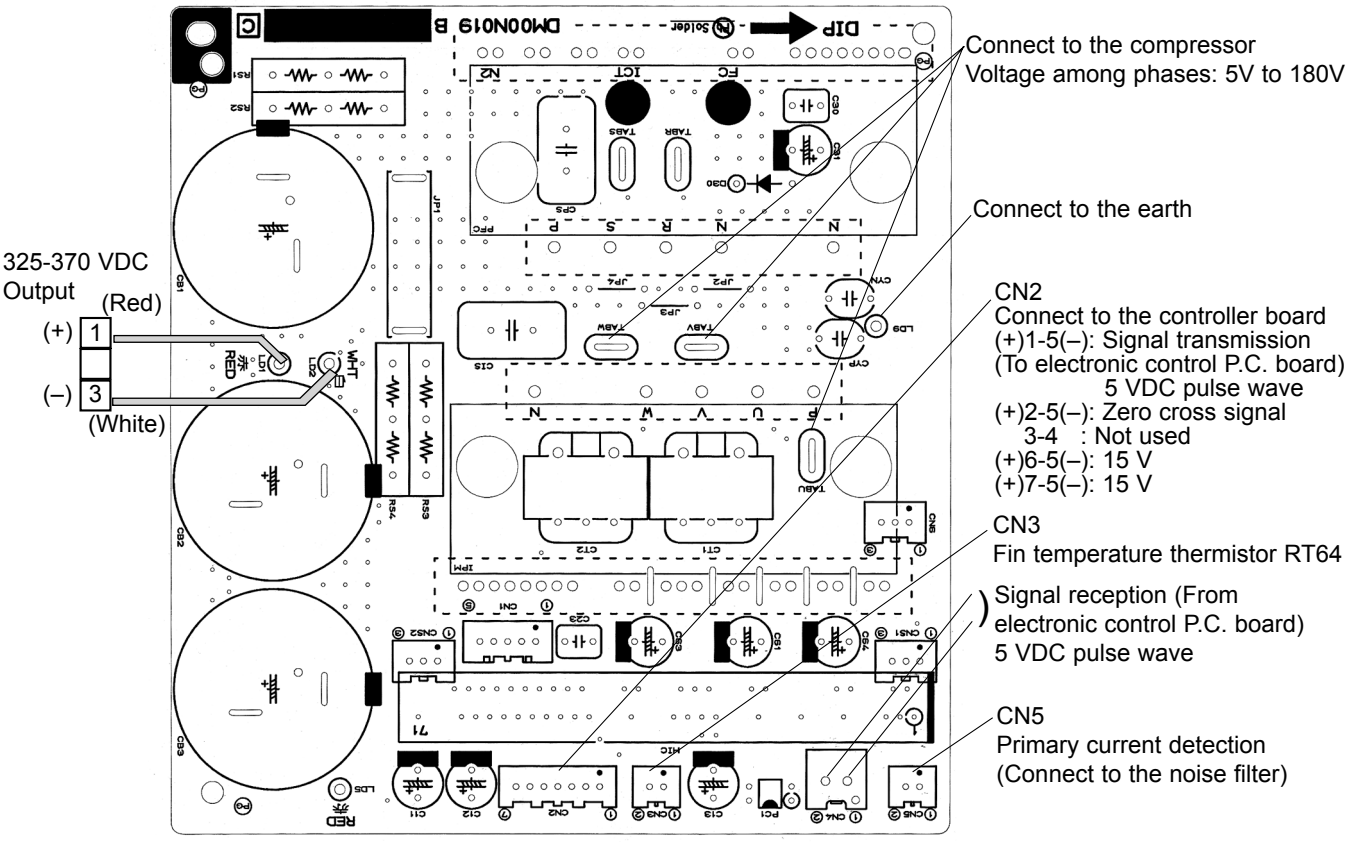
MUZ-GA50VA
MUZ-GA60VA
MUZ-GA71VA



3. Outdoor power board

MUZ-GA50VA MUZ-GA60VA MUZ-GA71VA



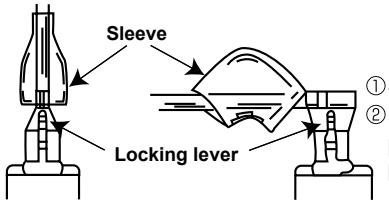


12 DISASSEMBLY INSTRUCTIONS

<"Terminal with locking mechanism" Detaching points>

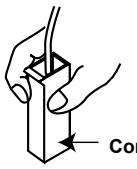
The terminal which has the locking mechanism can be detached as shown below.
There are two types (Refer to (1) and (2)) of the terminal with locking mechanism.
The terminal without locking mechanism can be detached by pulling it out.
Check the shape of the terminal before detaching.

(1) Slide the sleeve and check if there is a locking lever or not.



①Slide the sleeve.
②Pull the terminal while pushing the locking lever.

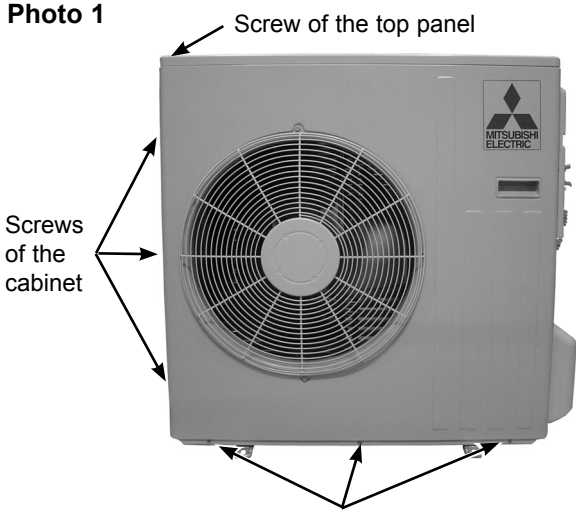
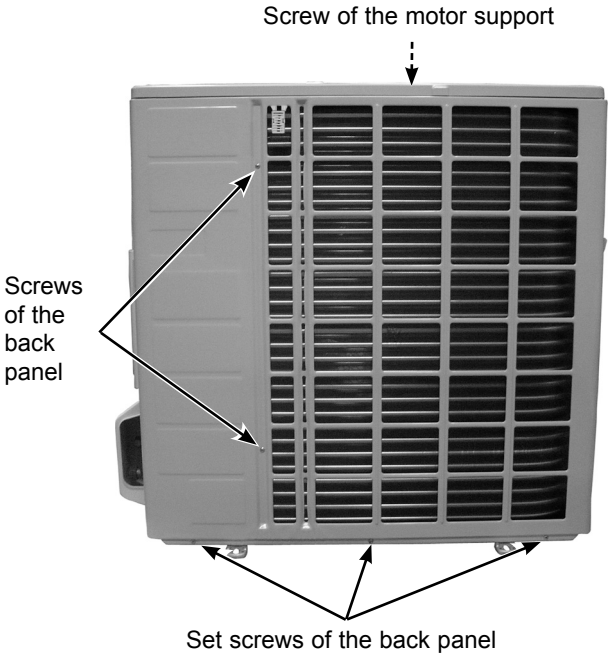
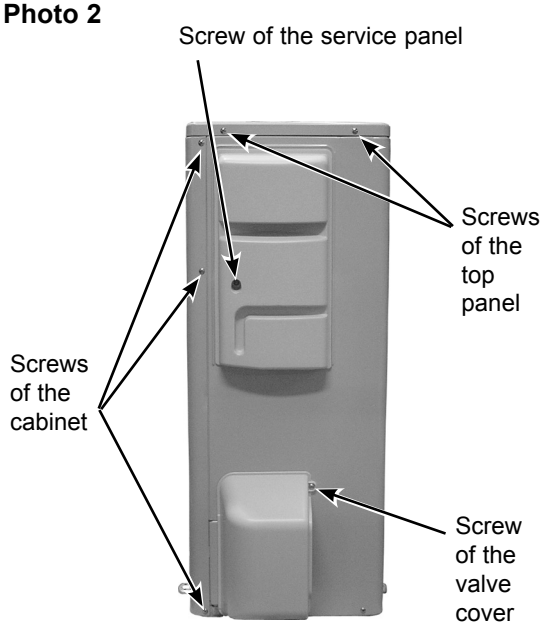
(2) The terminal with this connector has the locking mechanism.



①Hold the sleeve, and pull out the terminal slowly.

NOTE:
These photos are MUZ-GA71VA.
Other models are almost the same as MUZ-GA71VA.
Turn OFF power supply before disassembly.

MUZ-GA50VA MUZ-GA60VA MUZ-GA71VA

OPERATING PROCEDURE	PHOTOS
1. Removing the cabinet (1) Remove the screws of the service panel. (2) Remove the screws of the top panel. (3) Remove the screw of the valve cover. (4) Remove the service panel. (5) Remove the top panel. (6) Remove the valve cover. (7) Disconnect the power supply and indoor/outdoor connecting wire. (8) Remove the screws of the cabinet. (9) Remove the cabinet. (10) Remove the screws of the back panel. (11) Remove the back panel.	**Photo 1** 
Photo 3  	**Photo 2** 

OPERATING PROCEDURE

2. Removing the inverter assembly, inverter P.C. board and power board

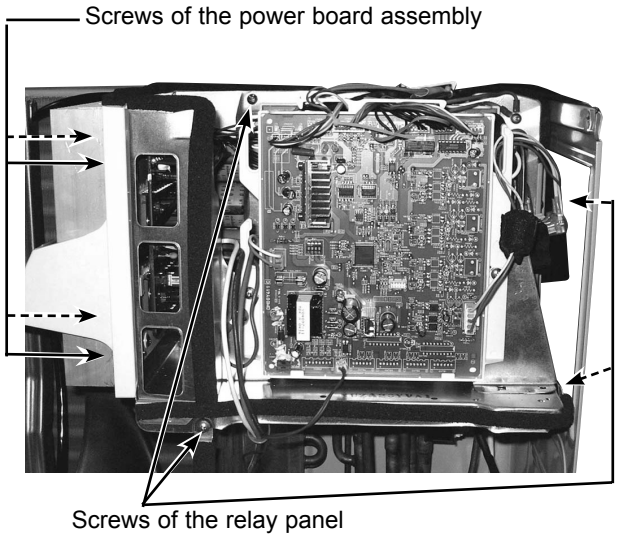
(1) Remove the top panel, cabinet and service panel. (Refer to 1.)
(2) Remove the back panel.(Refer to 1.)
(3) Disconnect the following connectors;
<Electronic control P.C. board>
CN931 and CN932 (Fan motor)
CN795 (LEV)
CN661 (Discharge temperature thermistor, defrost thermistor and outdoor heat exchanger temperature thermistor)
CN663 (Ambient temperature thermistor)
CN681 (High pressure switch) (GA60VA-E3, GA71VA)
<Noise filter P.C. board>
CN912 (R.V coil)
(4) Remove the compressor connector.
(5) Remove the screws fixing the relay panel.
(6) Remove the inverter assembly.
(7) Disconnect all connectors and lead wires on the electronic control P.C. board.
(8) Remove the electronic control P.C. board from the inverter assembly.
(9) Remove the screws fixing the power board assembly.
(10) Disconnect all connectors and lead wires on the power board.
(11) Remove the power board from the inverter assembly.
(12) Disconnect all connectors and lead wires on the noise filter P.C. board.
(13) Remove the noise filter P.C. board from the inverter assembly.

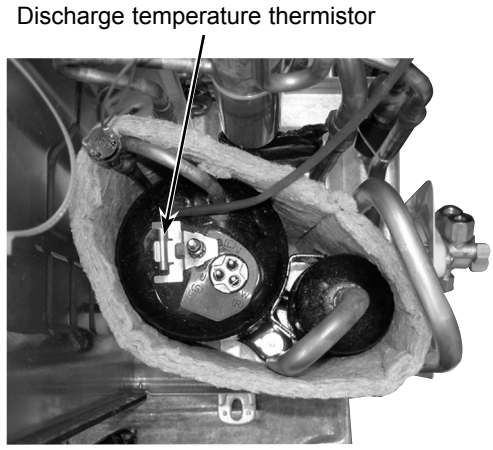
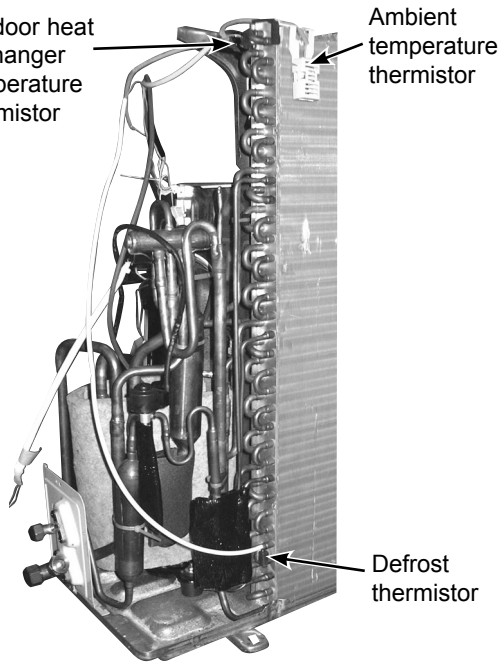
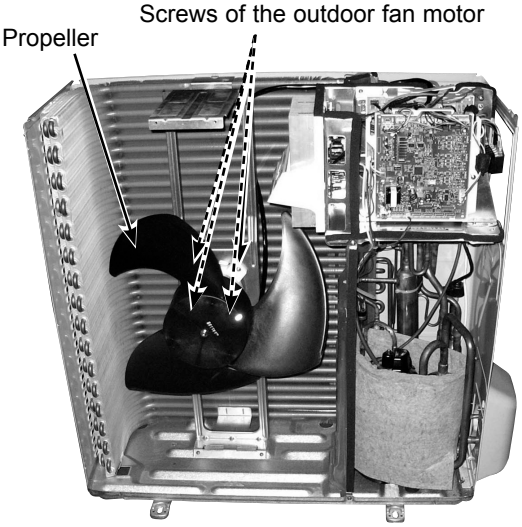
3. Removing R.V. coil

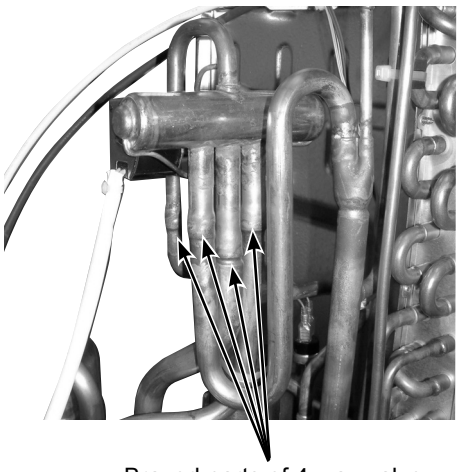
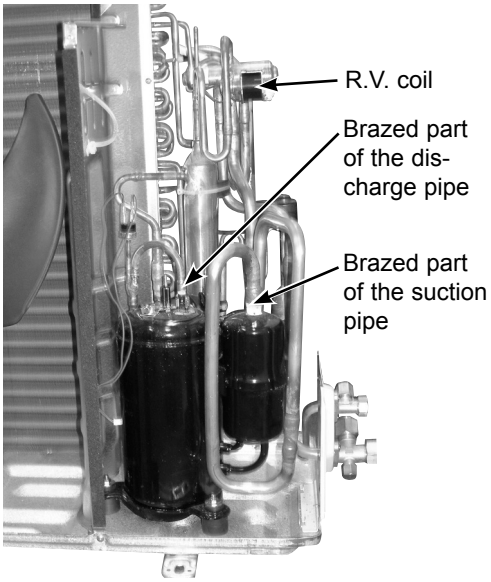
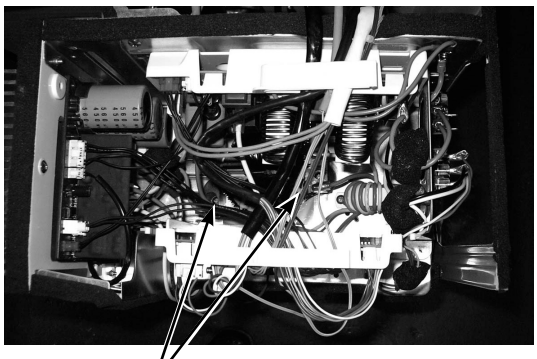
(1) Remove the top panel, cabinet and service panel. (Refer to 1.)
(2) Remove the back panel. (Refer to 1.)
(3) Disconnect the following connectors;
<Noise filter P.C. board>
CN912 (R.V coil)
(4) Remove the R.V. coil. (Photo 9)

PHOTOS

Photo 4



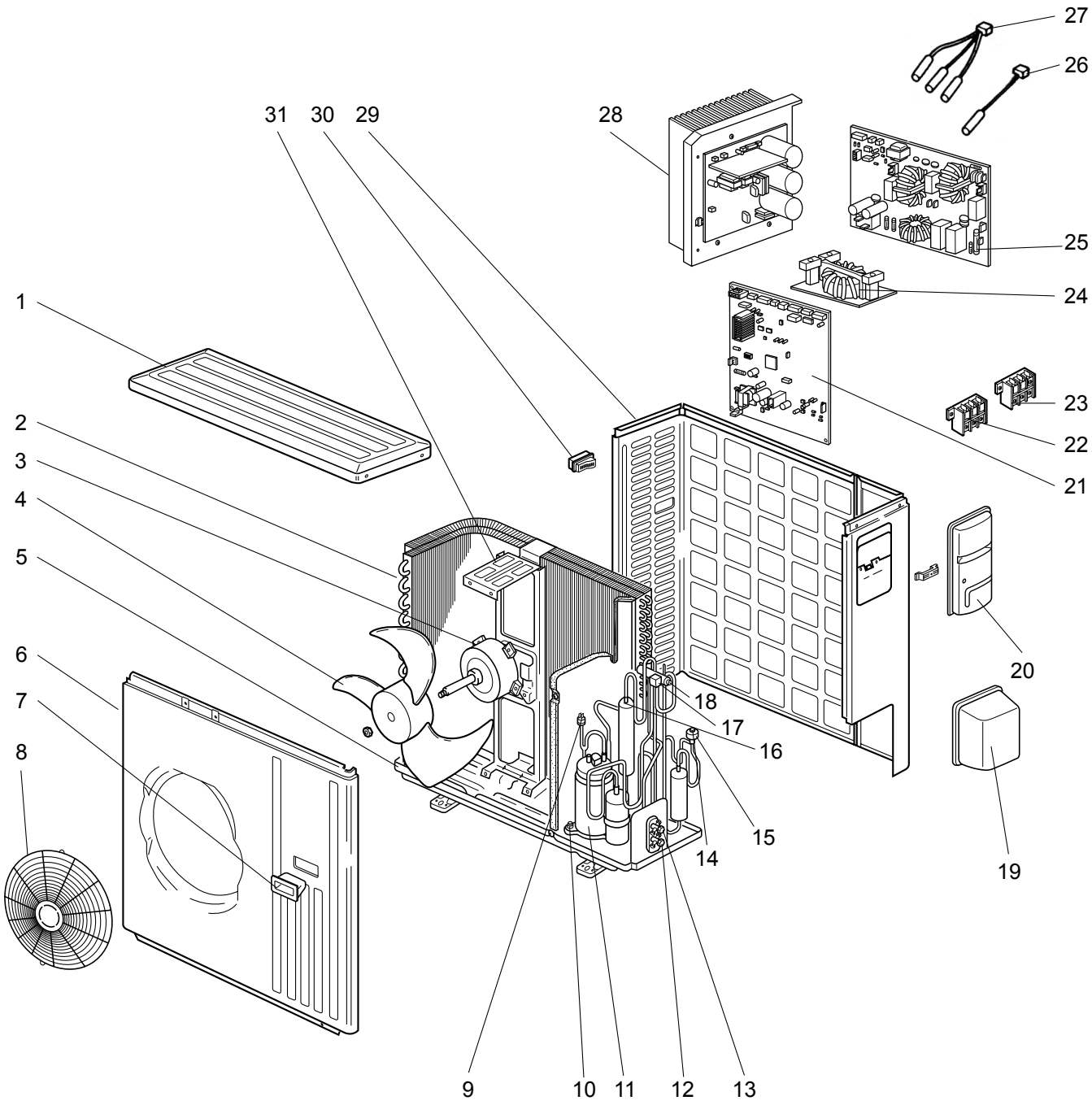
OPERATING PROCEDURE	PHOTOS
4. Removing the defrost thermistor, discharge temperature thermistor, outdoor heat exchanger temperature thermistor and ambient temperature thermistor (1) Remove the top panel, cabinet and service panel. (Refer to 1.) (2) Remove the back panel. (Refer to 1.) (3) Disconnect the following connectors; <Electronic control P.C. board> CN661 (Discharge temperature thermistor, defrost thermistor and outdoor heat exchanger temperature thermistor) CN663 (Ambient temperature thermistor) (4) Pull out the defrost thermistor from its holder. (5) Pull out the discharge temperature thermistor from its holder. (6) Pull out the outdoor heat exchanger temperature thermistor from its holder. (7) Pull out the ambient temperature thermistor from its holder.	**Photo 5**  **Photo 6** 
5. Removing outdoor fan motor (1) Remove the top panel, cabinet and service panel. (Refer to 1.) (2) Remove the back panel. (Refer to 1.) (3) Disconnect the following connectors; <Electronic control P.C. board> CN931 and CN932 (Fan motor) (4) Remove the propeller. (5) Remove the screws fixing the fan motor. (6) Remove the fan motor.	**Photo 7** 

OPERATING PROCEDURE	PHOTOS
6. Removing the compressor and 4-way valve (1) Remove the top panel, cabinet and service panel. (Refer to 1.) (2) Remove the back panel. (Refer to 1.) (3) Remove the inverter assembly. (Refer to 2.) (4) Recover gas from the refrigerant circuit. **NOTE:** Recover gas from the pipes until the pressure gauge shows 0 kg/cm² (0 MPa). (5) Detach the brazed part of the suction and the discharge pipe connected with compressor. (6) Remove the compressor nuts. (7) Remove the compressor. (8) Detach the brazed part of 4-way valve and pipe.	**Photo 8**  Brazed parts of 4-way valve **Photo 9** 
7. Removing the reactor (1) Remove the top panel. (Refer to 1.) (2) Disconnect the reactor lead wire. (3) Remove the screws of the reactor, and remove the reactor.	**Photo 10**  Screws of the reactor

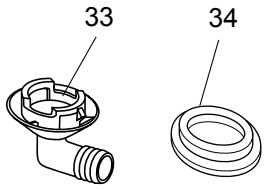
13 PARTS LIST (non-RoHS compliant)

MUZ-GA50VA MUZ-GA60VA MUZ-GA71VA

13-1. OUTDOOR UNIT STRUCTURAL PARTS, ELECTRICAL PARTS AND FUNCTIONAL PARTS



13-2. ACCESSORY



PARTS LIST (non-RoHS compliant)

MUZ-GA50VA MUZ-GA60VA MUZ-GA71VA

13-1. OUTDOOR UNIT STRUCTURAL PARTS, ELECTRICAL PARTS AND FUNCTIONAL PARTS

Part number that is circled is not shown in the illustration.

No.	Part No.	Part Name	Symbol in Wiring Diagram	Q'ty/unit			Remarks
				MUZ-GA50 VA - E1	MUZ-GA60 VA - E1	MUZ-GA71 VA - E1	
1	E02 819 297	TOP PANEL		1	1	1	
2	E02 851 630	OUTDOOR HEAT EXCHANGER		1	1		
	E02 853 630	OUTDOOR HEAT EXCHANGER				1	
3	E02 938 301	OUTDOOR FAN MOTOR	MF	1	1	1	RC0J60- □□
4	E02 851 501	PROPELLER		1	1	1	
5	E02 851 290	BASE		1	1		
	E02 853 290	BASE				1	
6	E02 819 232	CABINET		1	1	1	
7	E02 819 009	HANDLE		1	1	1	
8	E02 819 521	FAN GUARD		1	1	1	
9	E02 853 646	HIGH PRESSURE SWITCH	HPS			1	
10	E12 C34 506	COMPRESSOR RUBBER SET		3	3		3RUBBERS/SET
	E02 853 506	COMPRESSOR RUBBER SET				3	3RUBBERS/SET
11	E02 939 900	COMPRESSOR	MC	1	1		SNB130FLDH1
	E02 853 900	COMPRESSOR	MC			1	TNB220FMCH
12	E02 851 661	STOP VALVE (GAS)		1			Ø12.7
	E02 819 661	STOP VALVE (GAS)			1	1	Ø15.88
13	E02 821 662	STOP VALVE (LIQUID)		1	1		Ø6.35
	E02 822 662	STOP VALVE (LIQUID)				1	Ø9.52
14	E02 851 640	EXPANSION VALVE		1	1		
	E02 853 640	EXPANSION VALVE				1	
15	E02 851 493	EXPANSION VALVE COIL	LEV	1	1	1	
16	E02 853 299	OIL SEPARATOR				1	
17	E02 935 490	R.V. COIL	21S4	1	1	1	
18	E02 891 961	4-WAY VALVE		1	1	1	
19	E02 819 650	VALVE COVER		1	1	1	
20	E02 819 245	SERVICE PANEL		1	1	1	
21	E12 D01 450	OUTDOOR ELECTRONIC CONTROL P.C. BOARD		1			
	E12 C96 450	OUTDOOR ELECTRONIC CONTROL P.C. BOARD			1		
	E12 C97 450	OUTDOOR ELECTRONIC CONTROL P.C. BOARD				1	
22	E02 935 374	TERMINAL BLOCK	TB1	1	1	1	3P
23	E02 823 375	TERMINAL BLOCK	TB2	1	1	1	3P
24	E02 851 337	REACTOR	L	1	1	1	
25	E02 935 444	NOISE FILTER P.C. BOARD		1	1	1	
26	E02 935 309	AMBIENT TEMPERATURE THERMISTOR	RT65	1	1	1	
27	E02 851 308	THERMISTOR SET	RT61,RT62,RT68	1	1	1	DEFROST, DISCHARGE OUTDOOR HEAT EXCHANGER
28	E02 935 440	POWER BOARD		1	1	1	Including heat sink and RT64
29	E02 819 233	BACK PANEL (OUT)		1	1	1	
30	E02 817 009	HANDLE		1	1	1	
31	E02 851 515	MOTOR SUPPORT		1	1	1	
㉜	E02 851 936	CAPILLARY TUBE (TAPER PIPE)		1	1		Ø3.6xØ2.4x50
	E02 853 936	CAPILLARY TUBE (TAPER PIPE)				1	Ø3.6xØ2.4x50
	E02 861 936	CAPILLARY TUBE				1	Ø1.8xØ0.6x1000

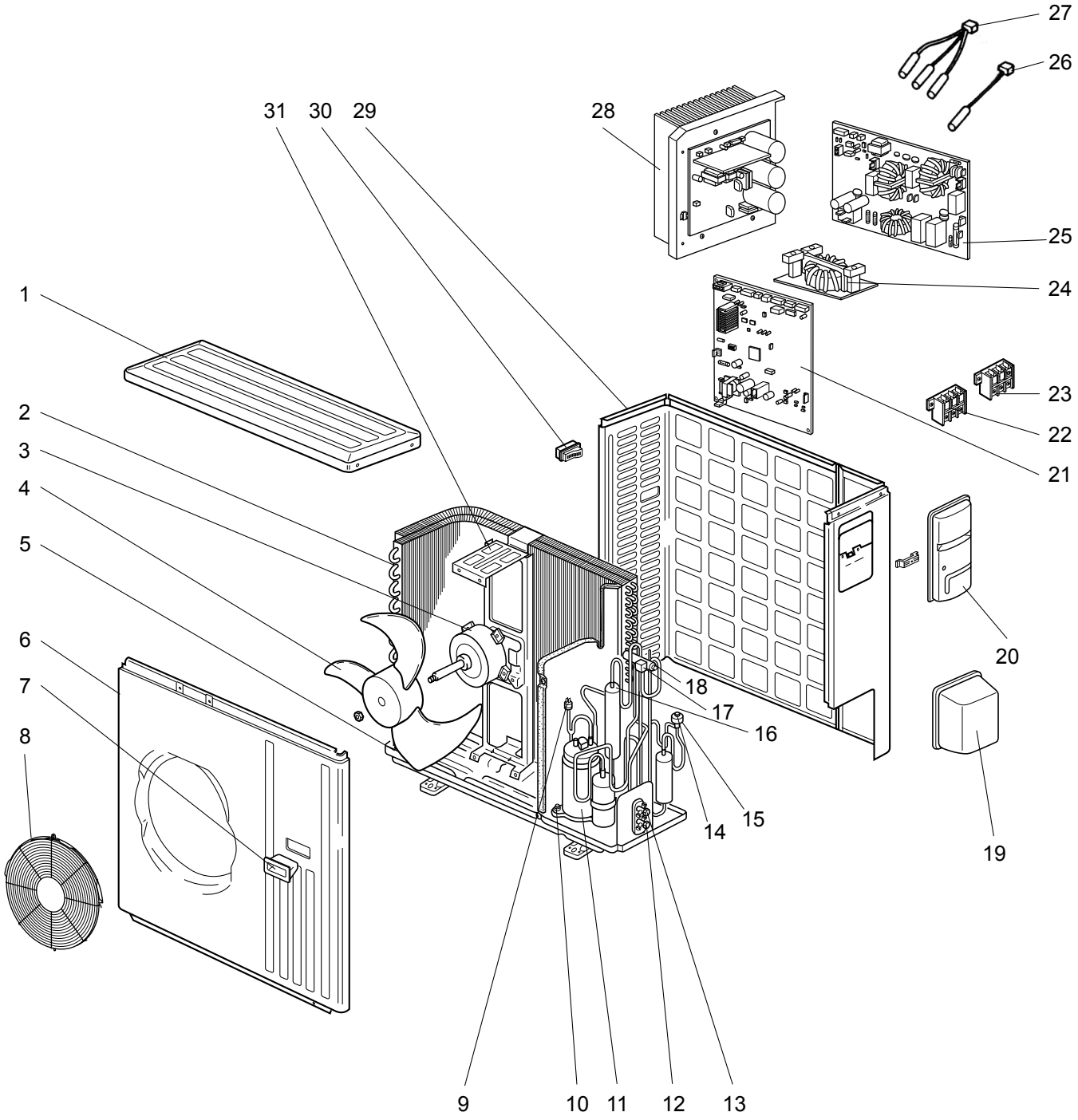
13-2. ACCESSORY

No.	Part No.	Part Name	Symbol in Wiring Diagram	Q'ty/unit			Remarks
				MUZ-GA50 VA - E1	MUZ-GA60 VA - E1	MUZ-GA71 VA - E1	
33	E02 817 704	DRAIN SOCKET		1	1	1	
34	E02 444 705	DRAIN CAP		2	2	2	Ø33

14 RoHS PARTS LIST (RoHS compliant)

MUZ-GA50VA MUZ-GA60VA MUZ-GA71VA

14-1. OUTDOOR UNIT STRUCTURAL PARTS, ELECTRICAL PARTS AND FUNCTIONAL PARTS



RoHS PARTS LIST (RoHS compliant)

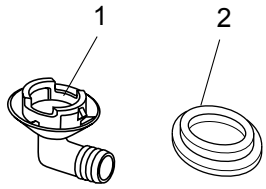
MUZ-GA50VA MUZ-GA60VA MUZ-GA71VA
14-1. OUTDOOR UNIT STRUCTURAL PARTS, ELECTRICAL PARTS AND FUNCTIONAL PARTS

Part number that is circled is not shown in the illustration.

No.	RoHS	Part No.	Part Name	Symbol in Wiring Diagram	Q'ty/unit						Remarks
					MUZ-GA50 VA - E1	MUZ-GA60 VA -			MUZ-GA71 VA -		
						E1	E2	E3	E1	E2	
1	G	E12 819 297	TOP PANEL		1	1	1	1	1	1	
2	G	E12 851 630	OUTDOOR HEAT EXCHANGER		1	1		1			
	G	E12 853 630	OUTDOOR HEAT EXCHANGER				1		1	1	
3	G	E12 938 301	OUTDOOR FAN MOTOR	MF	1	1	1	1	1	1	RC0J60-□□
4	G	E12 851 501	PROPELLER		1	1	1	1	1	1	
5	G	E12 851 290	BASE		1	1	1	1			
	G	E12 853 290	BASE						1	1	
6	G	E12 819 232	CABINET		1	1	1	1	1	1	
7	G	E12 819 009	HANDLE		1	1	1	1	1	1	
8	G	E12 D84 521	FAN GUARD		1	1	1	1	1	1	Including ice guard
9	G	E12 853 646	HIGH PRESSURE SWITCH	HPS				1	1	1	
10	G	E12 C34 506	COMPRESSOR RUBBER SET		3	3	3	3			3RUBBERS/SET
	G	E12 853 506	COMPRESSOR RUBBER SET						3	3	3RUBBERS/SET
11	G	E12 939 900	COMPRESSOR	MC	1	1					SNB130FLDH1
	G	E12 C06 900	COMPRESSOR	MC			1				SNB130FLEH1
	G	E12 C37 900	COMPRESSOR	MC				1			SNB130FGBH
	G	E12 853 900	COMPRESSOR	MC					1	1	TNB220FMCH
12	G	E12 851 661	STOP VALVE (GAS)		1						Ø12.7
	G	E12 819 661	STOP VALVE (GAS)			1	1	1	1	1	Ø15.88
13	G	E12 821 662	STOP VALVE (LIQUID)		1	1	1	1			Ø6.35
	G	E12 822 662	STOP VALVE (LIQUID)						1	1	Ø9.52
14	G	E12 851 640	EXPANSION VALVE		1	1	1	1			
	G	E12 853 640	EXPANSION VALVE						1	1	
15	G	E12 851 493	EXPANSION VALVE COIL	LEV	1	1	1	1	1	1	
16	G	E12 853 299	OIL SEPARATOR				1		1	1	
17	G	E12 935 490	R.V. COIL	21S4	1	1	1		1	1	
	G	E12 D02 490	R.V. COIL	21S4				1			
18	G	E12 891 961	4-WAY VALVE		1	1	1		1	1	
	G	E12 C18 961	4-WAY VALVE					1			
19	G	E12 819 650	VALVE COVER		1	1	1	1	1	1	
20	G	E12 819 245	SERVICE PANEL		1	1	1	1	1	1	
21	G	E12 D01 450	OUTDOOR ELECTRONIC CONTROL P.C. BOARD		1						
	G	E12 C96 450	OUTDOOR ELECTRONIC CONTROL P.C. BOARD			1	1				
	G	E12 C97 450	OUTDOOR ELECTRONIC CONTROL P.C. BOARD						1	1	
	G	E12 D02 450	OUTDOOR ELECTRONIC CONTROL P.C. BOARD					1			
22	G	E12 935 374	TERMINAL BLOCK	TB1	1	1	1	1	1	1	3P
23	G	E12 823 375	TERMINAL BLOCK	TB2	1	1	1	1	1	1	3P
24	G	E12 851 337	REACTOR	L	1	1	1	1	1	1	
25	G	E12 935 444	NOISE FILTER P.C. BOARD		1	1	1	1	1	1	
26	G	E12 935 309	AMBIENT TEMPERATURE THERMISTOR	RT65	1	1	1	1	1	1	
27	G	E12 851 308	THERMISTOR SET	RT61,RT62,RT68	1	1	1	1	1	1	DEFROST, DISCHARGE OUTDOOR HEAT EXCHANGER
28	G	E12 935 440	POWER BOARD		1	1	1		1	1	Including heat sink and RT64
	G	E12 B79 440	POWER BOARD					1			Including heat sink and RT64
29	G	E12 819 233	BACK PANEL(OUT)		1	1	1	1	1	1	
30	G	E12 817 009	HANDLE		1	1	1	1	1	1	
31	G	E12 851 515	MOTOR SUPPORT		1	1	1	1	1	1	
㉜	G	E12 851 936	CAPILLARY TUBE(TAPER PIPE)		1	1	1	1			Ø3.6xØ2.4x50
	G	E12 853 936	CAPILLARY TUBE(TAPER PIPE)						1	1	Ø3.6xØ2.4x50
	G	E12 861 936	CAPILLARY TUBE				1		1	1	Ø1.8xØ0.6x1000

RoHS PARTS LIST (RoHS compliant)

MUZ-GA50VA
MUZ-GA60VA
MUZ-GA71VA
14-2. ACCESSORY



No.	RoHS	Part No.	Part Name	Symbol in Wiring Diagram	Q'ty/unit						Remarks
					MUZ-GA50 VA - E1	MUZ-GA60 VA -			MUZ-GA71 VA -		
						E1	E2	E3	E1	E2	
1	G	E12 817 704	DRAIN SOCKET		1	1	1	1	1	1	
2	G	E12 444 705	DRAIN CAP		2	2	2	2	2	2	Ø33

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